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APPLICATIONS OF ELECTRICITY TO DOMESTIC USE[1]

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Though the individual household may seem a unit of small economic significance, the total number in a country form an aggregate of first importance. Similarly, the performance of the various household tasks in all the homes of a nation represents a labor requirement of great magnitude, whose extent and characteristics are well worth studying in detail by producers of household equipment. This paper attempts to indicate some aspects of the subject which bear on the applications of electricity in domestic use. It bases its statements entirely on conditions in the United States, but the general principles involved would doubtless hold wherever electricity and electrical applicances are available.

Estimate of the Household Labor Load. Some knowledge of the time spent in the performance of household tasks is a first essential in determining the household labor load. The Bureau of Home Economics in the United States Department of Agriculture is conducting studies into this question and has already gathered and analyzed data from some 2,000 homes, including both rural and urban (1). While this material is to be considered only as preliminary findings, and while records from a greater number of homes may somewhat change the average figures, it is believed that the data already analyzed may be taken as fairly representative of household conditions in the United States, at least outside of large cities. Including only the time spent on strictly household processes, the following figures are obtained: In farm homes, 52 hours a week; in other rural homes, 50 hours a week; in all other homes, 48 hours a week. The number of homes of these three types is estimated as respectively 6,400,000; 5,600,000; and 14,000,000. This gives a weekly labor load of

[1] Paper prepared by a committee of the American Home Economics Association for the World Power Conference, June, 1930. See page 667–668.

332,800,000 for farm households, 280,000,000 for other rural households, and 672,000,000 for all remaining households—a grand total of 1,284,800,000.

Variety of Processes Performed in Household Labor. A feature which distinguishes household labor from that ordinarily found in industry is the variety of processes in proportion to the extent of the output, many or all of them often performed by the same person. Thus, the tasks considered in estimating the household labor load included those connected with food, its preparation, serving, and preserving; with the cleaning and upkeep of the house and its furnishings; with laundering; with sewing; with mending; and with other care of clothing. Some idea of the division of labor among these tasks is given by weekly figures obtained from 139 farm homes in the State of New York (2).

Reduction of Household Labor by Electricity. More extended use of electricity is generally recognized as a means of reducing the household labor load, but only scrappy information is available as to the extent to which it is being and might be economically used for household processes, and in which of these it produces the greatest saving of time, human energy, and money.

The possibilities of reducing household labor by electricity depend upon such factors as available current, the availability and efficiency of equipment for the different household processes, and the actual reduction of labor accomplished in each case, together with costs. A few studies already made in the United States indicate that reliable information on such points can be obtained and is of practical value in directing efficient development.

Availability of Electric Current. Every city in the United States of 5,000 population or above now has electric service; 97 per cent of all communities between 1,000 and 5,000; 50 per cent of all communities between 250 and 1,000; and more than 25 per cent of all hamlets of less than 250 population.

Household Processes for Which Electrical Equipment Is Available. These include cooking, dishwashing, mixing, stirring, beating, cleaning, polishing, waxing, sanding, scrubbing, mothproofing and spraying, painting, washing, ironing, drying, food preservation, sewing, house heating, water pumping, lighting, ventilation, and miscellaneous minor ones.

A few measurements of the reduction of labor accomplished by the use of electricity in household processes were made in a series of rural electrical field studies made for the Committee on the Relation of Electricity to Agriculture (3).

A. H. Ryan and his coworkers at the Hoover Company have been engaged for some time in the study of the comparative energy cost of cleaning by manual methods and by electric cleaners. The method employed is that of indirect calorimetry. Their work shows that the homemaker using an electric cleaner is able to do her cleaning at an energy cost as low as 56 per cent above the resting energy expenditure. On the other hand, the energy cost of sweeping with a carpet sweeper in the ordinary manner of using it is about 138 per cent above the resting energy cost; and with the broom, 326 per cent above the resting energy cost. These results do not take into account the much greater efficiency of the electric cleaner. Similar studies were made in comparing the human energy expenditure in dusting with vacuum cleaner attachments and hand methods in which cloths and brushes were used. A considerable saving in the energy expenditure was found in using the attachments. Their results, if needed, may be secured from the Hoover Company.

The State College of Washington, Pullman, is starting studies on measuring energy required for washing and ironing processes, using methods similar to those employed by Ryan.

The following notes on tests made by Good Housekeeping Institute are of interest in this connection:

> The use of electric equipment may save time by making it possible to accomplish a piece of work in less time, as in using an electric polisher instead of a hand device for polishing the floor, or by releasing time so that the worker may perform other activities while the mechanical equipment is operating, as in the case of clothes washers or dishwashers.
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> The ranges with automatic temperature control give freedom from responsibility as well as release from the time formerly spent in watching and regulating the temperature by hand. Automatic controls on toasters and waffle irons may be said to save time in a similar manner.
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> But few definite studies as to the amount of time saved by using electric equipment are available. Where such studies have been made, the findings have been interpreted in a general way rather than specifically, as in practically every case the set-up varies. The plan of the house, placing and routing of equipment, grouping of accessory tools and supplies, and the managerial ability of the worker is different in each situation, and the importance of these factors must not be overlooked. In the few time studies reported here, the variables were reduced to the minimum—the worker in each case was a person accustomed to housework who worked at a moderate speed.
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> 1. One dozen table napkins were ironed by an electric iron in three-fourths the time it took to iron them with an iron heated on a range.
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> 2. From six to eight pounds dry weight of clothes may be washed in a washing machine in eight to fifteen minutes. Forty minutes was required to wash by hand eight pounds of clothes of like kind and soiled to approximately the same degree. In

washing more than one load, the time for the whole process is much shortened by rinsing each load as it is washed, in the stationary tubs, while the next load is being washed in the machine. It saves labor, however, to use the machine for rinsing as well as washing.

3. The actual washing and rinsing of the table dishes from a dinner for five people took seven minutes. The same number of dishes were washed and rinsed by hand and placed in a drainer in twenty-two minutes. In a subsequent test, the cooking dishes were washed in ten minutes while the table dishes were being washed, adding but three minutes to the time the dishwasher was operating. When the dishes were washed by hand, the total time was thirty-two minutes for table and cooking dishes.

Such studies, though scattered, are significant and highly suggestive of the type of work which might be done if one would weigh time and energy costs as well as money costs involved in the use of electricity in the home.

Potential Demand for Electricity and Appliances at Different Income Levels. The household demand for electricity and electrical equipment of course varies at different income levels, the greatest potentialities lying not among the relatively few high-income households, despite their greater individual purchasing power, but rather among those of moderate income whose large number offsets their lower scale of expenditures. It is not possible to tell exactly the number of families in the United States who live on the various levels, but estimates by Nystrom for 1929 probably give a fair picture of the relative importance of the groups (5).

As to the potential demand for different kinds of electrical equipment at various income levels, we know of no data assembled to indicate this. It is undoubtedly influenced by sales pressure, by the price, quality, and ease of operation of the equipment offered, by the probability of securing a full return for the expenditure in terms of labor saved or comfort gained, by the rates for electric current, by the extent to which builders install such electric equipment as electric refrigerators and stoves in houses and apartments built for sale or rent, and, of course, by whatever the proportion of families at the different standards of living may be in the future. Possibly the demand for various types of equipment at the different levels may be something like that suggested in the accompanying table.

Progress in Adaptation of Electrical Equipment and the Reduction of the Household Labor. Progress in the household use of electricity will be steadiest if emphasis is placed on adapting equipment and service to the actual reduction of the household labor load. This implies improvements in the efficiency and in some cases the cost of existing types; development of new types, adapted to processes for which electrical equipment is not

yet provided; and unification among types, including standardization, simplification, and interchangeability of parts. To secure the optimum utilization of the appliances also implies an understanding of the work added to the total household labor load by the various household processes and the development of equipment which will effect the greatest reduction of that load in return for the money spent for purchase, operation, and upkeep.

TYPE OF EQUIPMENT	LOWEST STANDARD REACHED IN POTENTIAL DEMAND	PERCENTAGE OF FAMILIES FORMING POTENTIAL DEMAND
Lighting[1]	Bare subsistence	90
Electric irons	Minimum for health and efficiency	60–70
Washing machines	Minimum comfort	30–50
Vacuum cleaners		
Toasters and other small cooking appliances		
Refrigerators[2]	Comfort	20–35
Stoves[2]		
Ironing machines		
Dishwashers[3]		
Sewing machine motors[3]		
Mixers[3]		

[1] If installed by builders
[2] If installed by builders and if rates for current are low
[3] Demand probably small

Improvement in Existing Types of Electrical Equipment. As may be expected in such a rapidly developing field, the quality of the many types of electrical equipment is highly variable. An appliance has frequently been put on the market without previous careful planning in the hope that it will meet or create a demand, the main purpose being to introduce some new detail of construction which makes the apparatus stand out in relation to those of competitors. It should, therefore, not be assumed that the many minor changes observed in new types of appliances necessarily mean increased efficiency. That this is widely recognized, is apparent from the caution shown by housewives in investing in electrical equipment. Advertising and sales pressure may, contrary to their purpose, increase this tendency; confusion and lack of confidence may result from unstinted praise of all makes and the absence of specific information about the performance of the apparatus in question. To a large extent, the housewife relies for information on criticism and recommendations from

friends who are using electrical equipment. Her personal experience also influences her profoundly, and one unhappy purchase may frighten a family from buying other electrical equipment for several years.

While the household use of electrical appliances is undoubtedly increasing, housekeepers nevertheless sometimes offer a sales resistance which retards its development. It is clearly in the interest of all parties, producers of current, manufacturers of equipment, and consumers alike, to have this situation remedied. It results largely from differences in the point of view and could be greatly remedied by clearer recognition of the actual needs of the consumer, by concerted effort to learn what these are and to adapt equipment and service to them.

One approach to this problem is through investigations of electrical appliances by groups not directly interested in their sale. Support for such enterprises is not easy to find, however valuable they may be to consumers; the latter are not sufficiently organized and cannot easily obtain sufficient funds to take the initiative. Neither are government agencies likely to step in. The hope lies with the light and power companies, whose natural interest is in a maximum consumption of current. They might establish a testing laboratory of the same type as that conducted in the investigation of gas appliances, which, through testing and approval of equipment suitable for use, might be expected to raise the quality of electrical appliances.

The need for standards of testing, is, however, apparent. Lacking such, the work may do more harm than good to producers as well as to consumers. The most important argument raised against standards is that they will tend to keep down the level of performance because manufacturers would be content merely to reach the standard set. This can be taken care of, it would seem, by setting the standards high enough and raising them as development proceeds in the electrical field.

A careful study should be made of the household processes, checking against these the electrical equipment now available for each. Such a study would reveal processes for which satisfactory electrical equipment is not now available and enable the manufacturers to center their efforts on its development.

Unification among Types. Another important mode of attack might be through a thorough-going program of standardization and simplification. Though doubtless the most effective approach, it is the most difficult to bring about.

However, the adoption of voltage standards and the very general acceptance of the alternating current as the one for general distribution of

electric energy, coupled with the adoption of standard frequencies, have already made it possible to manufacture equipment which can be used in practically any part of the United States. The reduction of the number and the standardizing of the form of lamp sockets and bases, as well as fuses and plugs, has facilitated the use of electricity for lighting in the home.

Increasing the interchangeability of parts such as cords, screws, brackets, and fittings, for different types of appliances would unquestionably facilitate their household use. Successful standardization, of course, should be a joint process in which producers, consumers, and experts take part. It may be of interest in this connection that the American Standards Association, in order to include the point of view of the consumer, has admitted to membership the American Home Economics Association and that specially qualified home economists are members of the committee on standardization of household refrigerators, both ice and electric.

Economy of Time and Labor through Use of Electrical Equipment. A few scattered studies have been made in the United States to determine what economies of time and money are actually accomplished in the household by the use of electrical equipment. Among these may be cited estimates made by J. E. Waggoner from wide observation of farms and farm homes throughout the United States (6). These indicate that the time which might be saved by electric service in the average farm home is about 19 hours a week. Calculated at the rate of 25 cents an hour, this would be equivalent to a yearly saving of $247. Waggoner quotes similar estimates made by C. C. Seitz of the Virginia Polytechnic Institute, who arrives at the figure of $253.60 a year. These estimates do not take into account the vastly increased comfort and convenience electricity brings.

Field studies on the use of fuels for cooking which were made at Purdue University in connection with a rural electrification project in Indiana, showed the cleaning and care of an electric range required on the average of 27 minutes per week, while corresponding figures for other fuels were: coal, 185 minutes; kerosene, 76 minutes; gasoline pressure, 118 minutes. Estimating the total costs of fuel and labor, the figures were: coal, $2.12; kerosene, $0.92; gasoline pressure, $1.09; and electricity, $1.49.

There are in various colleges, universities, and experiment stations of the United States home economics workers and facilities for conducting studies of this nature, and interest in them is increasing rapidly. That the problems are not so simple as they may look at first, becomes ap-

parent directly attempt is made to outline a satisfactory study of a given household process. One conspicuous difficulty is presented by the lack of scientific standards to determine when an operation has been successfully completed.

For example, in a study of the efficient use of electrical equipment in cooking processes, the following aims were essential:

1. To determine by some measurable, demonstrable means when a certain definite physical or chemical condition of the cooked food had been produced.
2. To estimate the actual number of heat units required to convert a raw food into a cooked food (this estimation to include a consideration of the weight of food, its specific heat, and the change in temperature.)
3. To reduce the ratio between the heat supplied and the heat actually required for a cooking process to the point of greatest efficiency by checking heat losses incurred by an inefficient heating unit or cooking equipment.
4. To determine the piece of electric equipment best suited to each cooking operation.
5. To set up definite standards for each cooking process based on the use of the most efficient type of electrical cooking equipment, and a definite method of preparation and cooking producing optimum results with the least possible expenditure of work and energy.

A similar analysis of the other household operations of laundering, house cleaning, and the rest would provide the means of scientific standardization of each operation necessary for efficiency; the analysis should also include a study of the energy output of the operator.

It seems reasonable to assume that if these operations could be standardized to the point where the homemaker could be sure of a definite set of conditions producing a definite result, she would have the means of reducing her household labor load to its lowest point. A study of the use of working time of farm homemakers in the state of Washington showed that the use of equipment did not appreciably lower the time spent in household operations.

This would seem to indicate the need for an analytical study of household operations and such a standardization of routine processes as would eliminate the time lost by the homemaker through uncertainty and unnecessary supervision. In the industrial field, such studies are recognized as essential, regardless of the difficulties they present. It seems hardly questionable that they would more than repay their cost in the case of household processes by promoting greater confidence in the real value of labor-saving devices and services as a means of lessening the household labor load.

Information Needed by Homemakers. If homemakers are to make the optimum utilization of equipment needed by the homemaker, they must be given reliable information both regarding the economy, convenience, and use of the various appliances and regarding their value in reducing the time and energy required for the household tasks in question. Uncertainty as to what may reasonably be expected from a given article tends to make them conservative about adopting it. This may be overcome by helping them to appreciate the relative benefits and costs of different types, including the various levels of cost at which appliances for a given purpose are now often offered by the same dealer.

There are several points on which the homemaker needs at least a little reliable general information. She needs an intelligent familiarity with a few technical electrical terms such as watt, kilowatt hour, volt, ampere, circuit, fuse. Much of the uncertainty and most of the fear which a few homemakers still feel toward electrical devices is due largely to a lack of understanding of these terms and how to use them. She needs to know the potentialities and limitations of the service she has in her own home. If her house is inadequately wired, and some houses are, she may be limited in the equipment she selects for her use. She needs to know that there is a difference between direct current and alternating current and between 25 and 60 cycle current. She needs to know how to use advantageously whatever service she has at her command. This implies an understanding of the location as well as the capacity of the electrical circuits throughout her house, the size and limitations of the fuse for each circuit as well as its value to her as a safeguard. She needs some general information on the operation costs of electric lighting equipment, heating equipment, motor equipment.

She also needs to become familiar enough with the agencies that are protecting her against possible mistakes in the choice, installation, and use of electrical equipment so that she can avail herself of whatever service they render. As regards the cost of different types of equipment, she should realize that appliances for a given use may be purchased at varying price levels. Many reliable dealers carry it at three distinct price levels. The lowest prices are, in the opinion of those selling, compatible with good service. Some equipment, however, is still merchandised that is too cheap to be a good investment. Buying from a reliable dealer who services the equipment he sells, is one method of avoiding equipment that does not prove a good investment. Buying equipment that is trademarked is another possible safeguard. That many homemakers postpone buying until they can buy the highest-priced equipment complete

in all its refinement testifies to the need for assistance in selection of equipment. So little information is available to them that they become more and more uncertain of what to buy. This uncertainty may account for the deliberation of the conservative buyer. There is still much to be done in making available to the homemaker material which will clarify her ideas on what to look for when she goes to buy electrical equipment, how to use it to her best advantage, and how to care for it.

Conclusion. Because of its availability as well as because of its adaptability, electricity seems of importance to the homemaker. Properly used, it should offer a means of lessening the labor and increasing the comfort of the home; and its cost, at least for the less expensive appliances, should not be beyond the means of the moderate-income groups which represent the bulk of the purchasing public. Whatever is done to bring electricity and electrical equipment among the many choices which the homemaker has to make in utilizing her income, time, and energy would seem worthy of attention, since in the business of homemaking, as in any other business, the labor problem is so large and so important. The safest way to assure continuous progress in the household use of electricity would seem to be to increase the systematic study of the household labor load and to adapt household equipment and service to the actual conditions and needs thus revealed.

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CHILD VERSUS HOME OR CHILD AND HOME?

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A lack of parental control is observed in a majority of cases of youthful delinquency. Assuming that this may often be a contributing cause of crime, the Advisory Council on Crime Prevention, under the auspices of the Massachusetts Department of Correction, conducted a study of this subject.

In this study, nearly 10,000 children in the public schools throughout the state told why they like their homes or why they dislike them and seek pleasure elsewhere. The information was put down in the form of replies to questions on a printed sheet entitled "Time Budget—Where Does Our Time Go?" The questions were devised to bring out concrete facts and were presented personally by the writer to the children, a small group at a time. Their age was that of early adolescence, the greatest number between twelve and fifteen years old with a few older and younger.

In all, 12,991 reasons were expressed for liking or disliking home. They show the home indicted on 22 counts and defended on 18 counts, in what is perhaps the greatest popular vote ever taken on the subject!

One question was, "Where do you prefer to spend your play time: near or in your home, or away from your home?—Why?" In general, 60 per cent of the girls preferred their homes and 47 of the boys. The age at which the greatest number "preferred home" was eleven years. At that age, 70 per cent of the girls and 60 per cent of the boys found greatest pleasure there. For each succeeding year of age, the home lost 5 per cent of its adherents.

Why Children Dislike Home. As to why homes lost their adherents, faults in the home itself were responsible for the loss in the case of 68 per cent of the boys and 76 per cent of the girls. Competition due to outside interests over which the home had little control caused 29 per cent of the boys and 22 per cent of the girls to prefer "away." Miscellaneous reasons were given by 3 per cent of the girls and 2 per cent of the boys.

The boys and girls were agreed as to the main fault with the home. The lack of companionship with parents, no brothers, sisters, or friends, drove 24 per cent of the boys and 33 per cent of the girls from the home to seek pleasure elsewhere. The lack of "friends" accounted for 13 per cent of the girls and 5 per cent of the boys.

The next reason, second in importance with both sexes, was too strict parental restraint. Sixteen per cent of the boys and 14 per cent of the girls gave this as the reason for choosing "away."

The third reason was also the same for both sexes—boredom. "There's nothing doing at home," was the answer of 7 per cent of the boys and 9 per cent of the girls. "There's no room in my home," "We have too many brothers and sisters," and other indications of crowding and bad housing accounted for 7 per cent of both boys' and girls' choice.

Again, both sexes agreed that many chores, home duties, could be evaded by being away from home; 5 per cent of the boys and 6 per cent of the girls so indicated.

The boys and girls differed as to the next most important reason. Among the boys, it was the lack of equipment with which to play—this accounted for 4 per cent of the boys and only 1 per cent of the girls. The girls were annoyed more than the boys by dissension in the home, quarrelling and squabbling between members of the family. Such friction in the home drove 4 per cent of the girls and 3 per cent of the boys away. The fact that mother worked and was away all day or that father worked at night and slept all day induced 1 per cent of the girls and 0.2 per cent of the boys to go elsewhere.

Ten per cent of the boys and 11 per cent of the girls gave the rather ambiguous answer, "I have more fun away from home." Just what was meant by "fun," we can only guess. Whatever it was, it was more attractive to the child than anything the home offered. Some of these answers were undoubtedly influenced by a lack or fault in the home, others give evidence of tastes for things the home cannot supply. For instance, the home cannot well supply the desire for camping and hiking, which, along with activities such as football and baseball and other field games, take 10 per cent of the boys and 6 per cent of the girls away from home. Four per cent of the boys and 2 per cent of the girls seek adventure and excitement which the home does not usually provide. These children are rather too young to be expected to spend much time with the opposite sex, yet it is interesting to note that 1.5 per cent of the boys found greatest pleasure away from home visiting with girls. On the other hand, only 0.7 per cent of the girls gave companionship with boys as a reason for preferring "away" from home.

Reading in libraries takes 0.4 per cent of boys and 1.1 per cent of girls "away." Earning money on a job is almost exclusively a masculine reason among the children, given by 1.3 per cent of the boys and 0.07 per cent of the girls. The least common reason was that of the country

child who wanted to go to the city, and the city child who wanted to go to the country. This reason was given by 0.3 per cent of each sex.

The conclusion to be drawn from these figures is that in spite of the so-called jazz age and the universal condemnation of movie and automobile as reasons why children shun their homes as a place of recreation, the primary reason for a child's drifting away from home is a fault or lack in the home. Nearly 75 per cent of the children who preferred "away" did so because the home did not provide that which is ordinarily expected of it. The child has a right to expect companionship with parents, relatives, and friends, social life, a place to play, things to play with, and withall, an interesting existence. It is established beyond a doubt that if the child does not get these things in the home, he goes out and gets them elsewhere. Our sympathies cannot but be with the child.

Why Children Like Their Homes. How about the answers of the 60 per cent that preferred the home and their opinions as to its attractions?

The 18 factors brought out by analysis of their replies readily fall under two general headings, positive and negative. A child stays at home because he gets something there or because nothing is to be gotten by going away. We shall first present the positive reasons.

We have already seen that if a child's home does not give the companionship and social life he wants, he seeks it elsewhere. It is very interesting to note, therefore, the most popular reason why children like their homes. It appears that 25 per cent of the boys and 33 per cent of the girls gave as their reason the fact that mother and father were "pals," that they had brothers and sisters and other relatives, that they were allowed to entertain friends. "Stone walls do not a prison make"—nor do they make a house a "home." The second most common reason would tend to verify this fact. It is not mother's rugs, pictures, early American furniture, or lace curtains that appeal to the child. He looks for an attic, or empty room of his own, or a basement, or a shed or tent or barn (where are the barns of yesteryear?). A child likes his home if it affords, as he says, "a good place to play"—and 12 per cent of the boys and 8 per cent of the girls so answer.

The next answer we found most often emphasizes again the spiritual values necessary in the making of the home. Whereas 5 per cent of the boys and 6 per cent of the girls were driven from their homes by too many chores, we find that 21 per cent of the boys and 15 per cent of the girls actually prefer their homes because they have interesting things to do there. Apparently, it is the spirit in which the task is offered that makes the difference. If the parent can engage the interest of the child

and appeal to his sense of responsibility, he holds the child; if he tries to force the child, drive him to do the daily tasks, they become things to evade by absence.

"More fun in the home"—what is meant by "fun," we do not know—was the next most frequent reason, 5 per cent of the boys and 7 per cent of the girls so answering. Good equipment—playthings, radio, pets, toys—meant more to boys than to girls, and "freedom to do as one pleases" meant more to girls. Creative opportunities such as "making" things and musical instruments meant more to boys; opportunity to read meant more to girls.

The most characteristic "negative" answer is that involving safety. Nearly 7 per cent of the boys and 5 per cent of the girls remained at home because they were afraid of getting hurt or of getting into trouble. We see here the results of patient lecturing by over-anxious parents. The next reason is similar, accounting for 3 per cent of the boys and 4 per cent of the girls: they feared new and strange environment.

We learned that too strict restraint resulted in 15 per cent of the children seeking to escape the home. Especially significant is the next answer, that because of parental control, "because father and mother make me," results in only 3 per cent of each sex remaining home. And of similar interest is the next answer, "so mother won't worry." Exactly 1.25 per cent of both sexes respond to this unworthy claim, the boys slightly more than the girls, at that.

"I like to play at home because I can be alone" accounting for 1 per cent of both sexes, is of interest to the student of abnormal psychology. It probably represents the "introvert" at his worst.

The next and last three reasons come from only 1 per cent of both sexes. They are, in order, "no other place to go," "no friends away from home," and last of all, "I haven't any money, and it costs money when you go away from home." This last reason accounted for 0.1 per cent of all the reasons given.

Summarizing these figures, we find that negative reasons kept only 16 per cent of the boys and 14 per cent of the girls in their home; whereas positive interests kept 84 per cent of the boys and 86 per cent of the girls in their homes.

Of the "positive" reasons, 50 per cent of the boys and 55 per cent of the girls responded to so-called spiritual elements of comradeship and interests in the home as against 35 per cent of the boys and 31 per cent of the girls who responded to material things such as equipment, toys, and playroom.

Conclusion. The condemnation of the home for its alleged evasion of its duties toward the child is almost universal. It is true that the responsibility of the home for the education and conduct of the child is very great. It is also undoubtedly true that many homes are falling short of the mark in meeting these responsibilities. All too frequently, after recognition of this unfortunate fact, we shake our heads and pessimistically murmur, "But what can be done about it?"

A partial answer may be had from this study. The parent must study the child, must become conscious of the needs and interests of the child. He must see the child's environment through the eyes of the child. Only by this genuine sympathy with the child can he hope to control the child. Common sense assures us that this is so, and these figures prove it.

CLOTHING OF ESKIMOS ON ST. LAWRENCE ISLAND

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While the Eskimos have changed many other customs since the coming of the white man, they still cling to their own type of clothing because the white man's garments are not adequate for protection against the severe cold weather. The women like to use the bright-colored cotton goods brought by the traders for their snow shirts, and during the summer months one may see a few of the girls wearing clothes of the type they learned to make in the government or mission schools, but otherwise the native garments prevail.

The description which follows, was made possible by Mr. Otto William Geist of the Bunnell-Geist St. Lawrence Island expedition,[1] who during three years lived with the Eskimos on that island and adopted their clothing. The details were obtained chiefly from Mr. Geist's diary and from examination of his clothing and that of Eskimo manikins made and dressed by women on St. Lawrence Island for the Alaska College Museum. Other information was obtained from letters and pen-and-ink sketches made for President Bunnell of Alaska College by Florence Nupok, an Eskimo girl of the highest type on St. Lawrence Island.

Except for a few garments in which cotton cloth is now sometimes used, all of the clothing is made from the skins of animals and birds obtained

[1] See "Food Habits of the Eskimo People of St. Lawrence Island" by Lola M. Cremeans, JOURNAL OF HOME ECONOMICS, April (1930), pp. 263–269.

on the Island or the nearby Siberian mainland and is constructed at home by the women and girls. From the time the child can hold a needle she is taught by her mother to sew, and it is not unusual to see a four-year-old stitching a skin costume for her doll. A young Eskimo friend of Mr. Geist writes,

> I often skin foxes and seals and then make white leather, boots, mittens, socks, coats, and all clothing out of the skins. . . . . I have always much work to do sewing skins, clothes, and taking care of meat, skinning animals, birds, and keeping the home clean, but I don't mind the work.

The ordinary steel needle now replaces the original hand-carved ivory needle; even thimbles are in evidence. In a few of the better homes one finds sewing machines on which the cloth snow shirts are stitched, and modern cotton thread is used for the machines. But all clothing made of skins and all footwear are hand sewn with sinew thread obtained from the back of the reindeer. An expert woman strips out the sinew and separates it by running it through the mouth, parting and pulling the fibers with the teeth. These fibers are again separated into short, thread-like pieces by hand, and twisted by hand to make a very long, strong thread. For coarser work, as on the boots called "mukluks," where the seams must be pulled tight to make the boot water-proof, whale sinew is used.

Such accessories as pins, tape measures, yard sticks, and patterns, so essential to the success of our dressmakers, are not in evidence. The Eskimo woman has a keen sense of proportion and a good feeling for design and measurement, which, together with traditional methods of construction, help to make well-fitting garments without patterns. She takes a few "off-hand" measurements by means of knuckles, fingers, or elbow. The chief Eskimo measure of length, the fathom, is a term borrowed from the trading and whaling boats and is defined in their own terms as being as far as a man can reach from the extremity of one hand to the other. It is used to some extent in barter where a large man who negotiates for five fathoms of rope has a decided advantage over the small man. Obviously, such a unit of measure is of little value even to an Eskimo in planning a garment. Thanks to loose styles and adjustable fastening, the agony of fitting, turning up the hem line, and the rest have no place in Eskimo life. Instead of pins, a few long stitches with sinew may be taken to hold the skins in place while the garment is in process of construction; but little basting, as we know it, is done.

Color is not an important feature of Eskimo costume. There are only

two dyes, and the Eskimo girl has little chance to dress to the color of her eyes, skin, or hair, or otherwise "bring out her type." One of the dyes is made from small bricks of a mud-colored clay which are burned in the fire on which the cooking is done outside the hut. The burnt clay, which turns to a lovely, soft, brick red, is powdered and mixed to a paste with urine and then smeared on the leather. This dye is seen on all socks, summer boots, and men's reindeer-skin trousers. The other dye is a soft, dark red and is made from the bark of the Siberian alder or willow, which does not grow on the island, but is brought to the islanders by their Siberian friends and relatives.

Seal, reindeer, and walrus are the most important sources of skin and fur, along with the skins and feathers of such birds as cormorant, auklet, murre, and eiderduck. The variety most sought after for clothing is perhaps the skin of the Siberian chukchi reindeer, after it has served its usefulness in a tent roof and has become soft and pliable from smoke and much handling. The skins of reindeer fawns, taken either stillborn or within a few weeks after birth, is another common material. The intestines and stomachs of animals are also utilized, as will be described later.

The contrast between indoor and outdoor temperatures makes the relation of indoor and outdoor clothing very different from that in most other regions. In the inner living room or agra, the seal-oil lamps maintain a temperature of from 75° to 80°F. during the winter, and a minimum of clothing is worn there, the over garments being left in the outer room. The men are in the agra only to eat, sleep, and dance; and when there, they usually wear only a very small apron or sack-like covering of rawhide or cloth which is fastened by a string around the waist. The children go entirely nude until they reach school age. The women are nude except for a very scant garment on the order of short athletic trunks; formerly this was made of sealskin with the hair on the outside, but now it is usually made of cloth such as denim or bed ticking and is almost diaper-like, with no fastening except a drawstring or loops attached to a string about the abdomen. In a few camps, a light, harness-like arrangement, made of quarter-inch leather thongs, is thrown over the chest. Similar thongs may also be worn on ankles and wrists and are usually strung with ornaments such as bright colored beads or teeth of sea lions.

The women's indoor costume is further supplemented with many strands of gay-colored, cheap beads of glass and porcelain such as the trading boats provide. The strands are of different lengths and may be

crossed over the chest and abdomen and on the back. Such beads are also worn by the nude children.

Ear ornaments of beads are worn by women and sometimes by men, and others made of animal teeth, by older women. The ear is usually pierced and the ornament tied in with sinew or rawhide.

Finger rings are worn by the women. These are bands of any bright metal, most commonly copper brass.

Neither labrets nor nose beads are worn by the St. Lawrence Islanders, although they are still found on Nunivak and Nelson Islands.

Tattooing of the arms, hands, and face is used a great deal for decorative purposes. Among the men, tattooing is not always used for adornment but more as a fetish or mark of honor.

Out-of-door clothing includes a sort of coverall for the women, trousers for the men, and for both sexes, a hooded slip-on shirt or coat called a "parka," a snow shirt and a raincoat to be worn over the parka, skin stockings, and the outer foot gear known as mukluks. There are also gloves or mittens for the men, but never for the women, who have their sleeves made longer to protect the hands.

The main feminine garment, or "coverall," is a one-piece reindeer-skin affair with long sleeves and with trousers reaching to just below the knees, where they are fastened with a drawstring or sinew over the top of the high boots. The only opening is the V-shaped one at the neck, made large enough for "stepping in." The neck and sleeves are trimmed usually with gray wolf or wolverine fur or with dogskin. This garment is usually made to wear fur side out; but in severe weather, a second one may be worn with the fur next to the body.

A man's trousers are of reindeer or sealskin. They have no openings except the straight-around ones at top and bottom; there are no pockets; and no belt is worn with them. They are held in place at the waist by a drawstring run through a hem turned in the fur. The bottoms are fastened inside the boot tops by drawstrings of sinew or cord run through a casing of canvas or other strong cloth. Trousers of reindeer are usually worn next to the skin, and with the fur inside. Although no patterns are used in making them, every pair will be seen to have much the same piecings, which necessity has developed from the natural shape of the pieces of hide. These pieces are very cleverly fitted together, and the seams are overcast on the outside. The sealskin trousers as a rule are worn over the reindeer trousers with the fur outside, but during the summer they may be worn with fur inside.

Sometimes a man's wardrobe includes an extra light pair of trousers

made of reindeer skin with all the hair removed and tanned to make a very soft, chamois-like leather. These are held in place by drawstrings, top and bottom. They may be worn in the home for dancing or when the temperature is a bit low.

Over the woman's coverall or the man's trousers is slipped the hooded parka. For the parka which a man wears next to the skin on the upper part of his body, the bird's skins are commonly used, with the feathers inside. Cormorant and eiderduck are the usual kinds, the latter being worn chiefly by the older people. The parka is long enough to reach to the knees, is open only at the neck, and ties under the chin. It is made loose so that the hands can be drawn inside for warmth. It has no buttons or other fastenings. A man holds his in place at the waist by a hunting belt of leather to which are attached beads, walrus teeth, polar bear fangs, and pieces of leather used as charms to keep away the evil spirits or bring good luck to the hunter. A hunting knife in its sheath, a sharpening stone, a tobacco pouch, and a shell bag are also fastened to the belt. A second parka, this one always of fur, may be drawn over the first for extra warmth.

The snow shirt and the raincoat are intended to be worn over the parka and like it are slip-on, hooded garments, open only at the neck. Men sometimes omit both, but women never go out without one or the other; this is partly to protect the parka, but also a matter of style. In fact, the snow shirt is a feature of her wardrobe by which an Eskimo woman especially gratifies her desire to express her individual taste in clothes—a feeling easily understood by her sisters elsewhere. It is also the garment in which she has yielded most to foreign influence. The snow shirt most popular with women nowadays is made of bright-colored, gaudy-patterned calico or percale purchased from the trading boat. Just as a white woman likes to have an "exclusive model" when she buys a dress in a shop, so an Eskimo man (for it is he who does the family shopping) avoids difficulty by buying the whole bolt of cloth chosen from the trader's stock. These cotton snow shirts are made with kimono sleeves and are finished around the bottom with a ruffle about six inches deep, perhaps trimmed with the tatting that some of the girls have learned to make in the government schools. A piping of red cloth is considered a lovely touch, regardless of the color and design of the cloth.

The native snow shirt, whether for man or woman, is made of frozen intestines, preferably of the mukluk or bearded seal, or of the walrus. To describe briefly the very long process of preparing them, the fresh material is cleaned, scraped, and soaked over night in fresh water; next

day, it is filled up with fresh water, drained, and placed in lukewarm water until it is completely cleaned; then it is blown up and hung in the outside air until it has frozen dry. When finished, it is soft, white, and opaque. The edge of the hood on the snow shirt is usually faced with a narrow band of white or red leather, which makes the casing for a sinew drawstring. A narrow fringe of baby seal fur is invariably sewed around the bottom of the body and of the sleeves.

The raincoat is an essential garment in the very damp climate of the Island. It is very similar in shape and finish to the native snow shirt. It, too, is usually made of seal or walrus intestines, or occasionally of the stomach of the walrus. The preparation of the material is quite different, however; it is carried on during the summer months, without freezing, and the tissue is dried with natural oil left in. The finished material is pliable, though not so soft as the frozen; it is light tan in color and transparent, so that the Eskimo raincoat vies with the modern collegiate "slicker" in appearance, or exceeds it because of the extra effect of the fur fringe and the colored facing to the hood.

The sewing of the native snow shirt and the raincoat is a veritable work of art. Although no pattern is used, each garment is put together in the same way and looks quite "tailor made." The seams are important features. The raw edges are turned in, and a plain seam is made with running stitch. The masculine and feminine garments are distinguished by the direction in which the seam is turned. In a man's, the seam is invariably to the outside; and in the woman's, to the inside. So important is this difference that if a man should appear with seams on the outside, he would be a laughing-stock. Perhaps a brief description of Mr. Geist's raincoat will serve best to show the intricacy of the workmanship. The body of the coat is made with eighteen lengthwise gores, tapered to fit the chest, and with the fullness across the back provided for by one or two gussets. The pieces in the center of the front and back are continued up into the hood. A good fit across the shoulders and head is obtained by a strip six inches wide, which extends from the armseye, across through the hood to the armseye; it is gathered at the back of the hood, drawn up to fit the head, and sewed to the pieces coming up from the back of the coat. The armseye is straight and formed by the edges of the front and back. A good fit is obtained by means of a pointed gusset set under the arm. The sleeve consists principally of four long strips about three inches wide, with two specially shaped pieces set in under the arm to give the proper width in the upper part. There are no cuffs, but the sleeves are trimmed with baby seal fur, as already described.

The whole makes a remarkably well-constructed garment, worthy of a place as a "Vogue special."

The footwear for men and women is similar in general character but carefully distinguished in certain details. The most important kind is the mukluk, a sort of slip-on sealskin boot which gets its name from the large bearded seal. Although attempts are made to adopt other articles of the white man's clothing, mukluks remain in universal use. They are made without "rights" and "lefts," and each boot in a pair is usually worn first on one foot and then on the other. The soles are of sealskin, from which the hair has been scraped, and are cut moccasin fashion, with a turn-up about an inch wide all around the foot. The uppers are also made of sealskin and are sewed to the soles by hand with sinew; this seam is always piped with white leather for waterproofing or for looks. A woman's boots differ from a man's in several ways. For one thing, the leather ties, by which she fastens them, are attached one on each side of the heel and then wrapped around the leg, whereas a man's are always crossed in front first. In a woman's boots, the tops are always made of skin from which the hair has been removed, except in the strip of deerskin which is sewed on at the very top and over which the legs of her coverall are fastened. Men's boots, on the other hand, allow more variety. In those for winter, the tops are made with the hair on the outside, while for summer it is removed or turned to the inside and the skin is dyed in the colors already described. Knee length is the most common, but shorter ones are worn in summer.

There is also a sort of ankle-length boot that is sometimes worn indoors; it might be said to correspond to our bedroom slippers and is often highly decorated. Mukluks give more opportunity to express individuality than any other part of the clothing. Every year each person has a new pair and each tries to excel the rest in the matter of decoration and workmanship.

Stockings are made of either reindeer or sealskin. They are the same length as the short mukluk, and the bottom is sewed on like a moccasin. The tops of the deerskin ones are "ready made" from the skin of the deer's leg, which calls for little alteration except trimming and sewing to the sole. The sealskin ones are made with the fur on the inside and the seams on the outside.

On hunting days one finds the woman up early, preparing the boots and warming the grass that is always worn inside the soles of the boot by both men and women. It acts as "shock absorber" and perspiration absorber and protects the sole against wear on ice and stones. The grass used is

a native variety which is dried, stripped of the rough outside fibers, and straightened with an ivory comb.

As was noted above, mittens are worn by men only, the women keeping their hands warm in their long sleeves. The mittens are made of seal or dogskins, with nowadays occasional yarn or canvas ones to wear inside the others.

Standards of laundering and dry cleaning are necessarily quite unlike those in a modern city in the temperate zone, and an Eskimo considers his wardrobe up to all requirements if it includes "two of everything."

The fashion of hairdressing for men and women is characteristic and distinctive. The haircut of an Eskimo man on St. Lawrence Island is accomplished by dampening the top of the head and shaving it with a sharp hunting knife so that a fringe of hair is left just above the ears. Among girls and women, individuality in hairdressing is not the rule, nor has bobbed hair become the fashion. Small girls and grandmothers alike part their sleek, straight, black hair in the middle from front to back and braid it into two tight braids, one behind each ear. Strings of gay beads are often twisted or fastened into the braids. A calico or gingham string tied three inches from the end of the braid prevents ravelling. Very often the two braids are tied together. They always hang in front except when the person is at work, when they are put behind the back. The native hand-made, ivory combs are now replaced with machine-made ones bought from the trading boat. One variation in the hairdressing is occasionally seen and has a special significance. This is the wearing of bangs, which they adopt when there is severe illness or death in the family. The belief is that by cutting the bangs they will prevent the bad spirit from recognizing his victim and thus thwart him in his evil attempt.

INCOME AND EXPENDITURES OF WOMEN FACULTY MEMBERS IN THE UNIVERSITY OF NEBRASKA

GRACE MARGARET MORTON AND MARJORIE RUTH CLARK

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Two income-expenditure studies of faculty members were recently made at the University of Nebraska in an attempt to determine certain factors in the cost of living among this specific group for the year 1928. One questionnaire was sent to all faculty members to learn, if possible, the percentages of incomes spent for the various items of living, professional requirements, and savings during 1928. Women faculty members were asked to fill out another and more detailed record in the hope that the reports would give a clear picture of their present plane of living. The study seemed pertinent since the University of Nebraska did not at the time grant sabbatical leaves and since there is general feeling among members of university faculties that their salaries are inadequate. It was further hoped that the study would be helpful to students of income, revealing in a measure the spending habits of a typical group of professional women. Numerous cost of living studies have been made dealing with the working man's family, the working girl, the low-salaried woman; and budgets have been worked out for their guidance. But there are, as yet, very few income expenditure studies showing how the professional classes, and especially professional women, spend their income. Two admirable studies, one by Jessica Peixotto and one edited by Henderson and Davie, have recently been published; but both of these deal with married faculty members.

Of the entire group of 104 faculty women at the University of Nebraska, 29 or 27.8 per cent filled out the blanks upon which the present study was based. Various reasons were given for failure or unwillingness to cooperate in this study. Some said that no expense accounts were kept; some, that incomes were adequate for needs and keeping records was considered futile; some, and these made up the largest group of those who failed to fill in the blanks, stated that since their incomes covered only necessities and left no margin for choice in spending, records were useless; and a few older faculty women felt that any attempt to discover either the amount of or the manner in which their incomes were spent was an effort to deprive them of the sacred privilege of privacy in earning and spending.

The figures in table 1 indicate that while women enter university posi-

tions, many of those who enter do not remain in the work long enough to reach the higher academic ranks. Of the 99 full professors in the university, only 4 per cent were women, while 39 per cent of the assistant professors, 42 per cent of the instructors, and 53 per cent of the assistant instructors were women.

TABLE 1

Number and proportion of women in entire faculty and in this study, with average salary and total incomes of the latter

ACADEMIC RANK	NUMBER OF MEN AND WOMEN IN FACULTY	WOMEN IN FACULTY		WOMEN IN THIS STUDY				
		Number	Proportion of total	Number	Proportion of total	Salary	Total income	Proportion of salary to total income
			per cent		*per cent*			*per cent*
Professor	99	4	4	2	50	$3,784	$4,896	77.3
Associate professor	52	12	23	4	33	3,040	3,372	92.2
Assistant professor	54	21	39	6	26	2,594	2,826	91.8
Instructor	126	53	42	14	26	2,097	2,298	91.2
Assistant instructor	26	14	53	2	14	1,150	1,900	60.5
All ranks	374	104	28	29	28	2,533	3,050	83.0

Table 2 shows the academic degrees reported by the 29 women in the group. The fact that no one in the higher academic ranks held less than a master's degree would seem to indicate that such rank is seldom attained without a long period of training and service.

TABLE 2

Academic degrees held by women of group studied and years of service in the University of Nebraska

ACADEMIC RANK	NUMBER HAVING ACADEMIC DEGREES				YEARS OF SERVICE	
	None	A.B.	M.A.	Ph.D	Average	Range
Professor			1	1	10	6–14
Associate professor			1	4	11.6	1–25
Assistant professor		3	3		14.6	2–32
Instructor	2	8	3	1	3.4	1–10
Assistant instructor		2			20.5	6–35

The average salaries and total incomes of the group studied are included in table 1. Of these 29 women, 21 reported some income in addition to salary, and these 21 included representatives from all academic ranks. Table 3 shows the sources of additional income. Of these,

property contributed the most, while writing appeared the least lucrative, probably because most of it was for professional journals from which no remuneration is received.

TABLE 3

Sources and amounts of income received in addition to salary by 21 out of 29 women faculty members

SOURCE	NUMBER REPORTING	AVERAGE AMOUNT	MINIMUM AMOUNT	MAXIMUM AMOUNT
Property	13	$470.50	$71.13	$1,674.15
Extra teaching	8	273.62	90.00	390.00
Gifts	9	23.09	6.00	49.00
Writing	1	40.00	40.00	40.00

TABLE 4

Average distribution of expenditures among 155 faculty members, including 29 women

ITEM	ACADEMIC RANK										ALL RANKS	
	Professor		Associate professor		Assistant professor		Instructor		Assistant instructor			
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent
Shelter	16.4	9.3	15.4	11.0	19.2	10.2	20.6	12.1	25.3	11.8	18.3	10.5
Food	16.8	5.5	15.1	10.8	17.0	11.8	17.1	17.1	23.1	15.1	17.3	10.6
Clothing	11.3	14.7	10.6	13.5	10.5	12.4	11.3	15.2	15.0	19.1	11.4	14.7
House operation	7.0	1.1	6.8	3.8	6.3	7.3	4.9	5.8	5.9	0.7	6.3	3.5
Automobile and transportation	7.4	6.2	7.6	6.7	7.5	7.5	8.2	5.3	5.8	2.1	7.4	5.8
Health	4.8	0.5	4.3	4.2	5.2	3.0	5.6	3.5	3.0	6.2	4.8	2.8
Dependents living elsewhere	1.9	4.8	2.2	6.4	1.4	1.4	1.6	0.0	0.0	0.0	1.6	3.2
Recreation, travel, clubs	6.1	6.2	6.4	10.1	4.3	3.9	5.0	10.5	3.1	12.1*	5.2	7.9
Books, education, and societies	2.4	3.8	2.0	1.8	2.0	1.7	2.0	1.4	2.1	1.0	2.5	2.3
Professional meetings	1.2	2.2	1.8	1.3	0.8	0.6	0.3	2.8	0.8	0.0	1.0	1.6
Savings	15.0	37.4	18.6	19.1	15.8	30.7	14.9	18.2	10.2	23.7	15.5	27.7
Incidentals	5.4	0.9	4.2	3.4	6.0	3.1	5.3	1.3	3.3	3.4	4.9	2.3
Gifts, church, and charity	4.3	7.4	4.3	7.1	4.0	6.4	3.2	4.8	2.4	4.8	3.8	6.4
Debts		0.0		0.8		0.0		2.3		0.0		0.5

* Including a summer in Europe for one member of group.

The percentage distribution of expenditures for the women faculty group appears in table 4, along with corresponding figures for the group

including both men and women. Among the women, the largest item of expenditure was for savings, 27.7 per cent. Clothing came next with an average of 14.7 per cent. Of the academic ranks, that of professor gave the highest percentage in expenditures for savings; but for food, clothing, and shelter, expenditures were largest in the lowest salaried ranks.

It is significant to compare the figures for the 29 women with those for the mixed group of 155 faculty members. Shelter and food expenditures were higher for the mixed group while those for savings and clothing were notably lower. In the mixed group, only 11.4 per cent of the entire income was spent for clothing as against 14.7 per cent spent by the unmarried women, chiefly for themselves. It should be noted, however, that their occupation and the current standards for their appearance at work require clothing of a type more expensive than that of the faculty man's wife, who spends most of her time at home where relatively inexpensive clothing is considered appropriate. Even the faculty man to be well-dressed is not required to spend as much as the faculty woman.

A comparison of the amounts spent for dependents by the two groups is also interesting. The 29 faculty women included in the present study were remarkably free from this demand on their incomes. Fifteen, or 51 per cent, reported some contribution to dependent persons, but only three reported persons wholly dependent on them for support. Of the 15, 8 reported that the dependents lived with them and 7, that they lived elsewhere. The number of cases involved is probably too small to have great significance; but so far as they go, the figures do not seem entirely to bear out the statement often made that single women as well as men with families usually support dependents. The figures here given do not indicate that dependents made claims demanding great sacrifice from this group of 29 faculty women.

On books and educational societies as well as on professional meetings, the two groups reported approximately equal percentages of expenditure. On gifts, church, and charity, women spent almost twice as much as the mixed group. On recreation and travel, the women fared considerably better than did the members of the faculty at large.

From this comparison it is obvious that the expenditures of the unmarried women are larger in every item which might be termed luxury. The enjoyment of such luxuries may in a measure, at least, be considered compensations for their lack of family life. At the same time, such a comparison may raise a question as to the justice of our present method of salary determination and present an argument for some system of adjusting the salary to the number of persons dependent upon it.

OPEN FORUM

Washington Child Research Center. The recently published report of the work of this Center contains much of interest to home economists. It will be recalled that the original grant from the Laura Spelman Fund creating the Center was made to the American Home Economics Association, and it is pleasant to know that an extension of this grant for two more years had just been made.

The general purpose and organization of the Center are as follows:

It was believed that the establishment of such a Center in Washington would strengthen the work in child development of a number of agencies, both governmental and private, and would stimulate the development of additional studies in this field. With this purpose in mind, the following organizations became affiliated with the Center: American Home Economics Association, Bureau of Home Economics, Bureau of Education, American Association of University Women, George Washington University, University of Maryland, United States Public Health Service, Child Development Committee of the National Research Council.

As an example of the mutual benefit accruing from this type of cooperation, the Bureau of Home Economics has placed a nutritionist at the Center. The Center benefits from the services of this individual who becomes an integral member of the staff, and at the same time the Bureau of Home Economics is enabled to carry out nutritional investigations with children in cooperation with other specialists.

Since its establishment, the Center has conducted four phases of work: the study and care of preschool children in the nursery school section; the study and treatment of behavior problems of children in the consultation section; teaching of university and special students, child study groups, and parent education; and research.

Twenty-four children are enrolled regularly in the nursery school section of the Center. The children attend from 8:30 a.m. to 4:00 p.m. The full day program enables the staff to make observations on the children's food habits and physical development and the distribution of play and rest throughout the day, and on their afternoon sleep habits in addition to the other studies.

The consultation section enables the Center to carry on studies with children up to ten years of age who have developed behavior problems. All are enrolled for a minimum three months' period. These children are studied physically, psychologically, nutritionally, psychiatrically, and the data interpreted from the standpoint of the home organization, and proper recommendations made when necessary.

In addition to the individual conferences with parents a program of parent education was instituted. Formal lectures by specialists are given at irregular intervals

and discussion groups are held during which members of the staff and parents discuss problems common to many of the children. It has been found that parent meetings in which discussions are preceded by informal reports have been most successful in stimulating interest.

The educational activities include, in addition to parent education work, classes for university students in education and psychology and observation groups of students of home economics and parent-education.

The Center has been open to all qualified students of child development. They are allowed to observe the children, but without interference with their normal routine. Laboratory courses for beginning students are conducted by members of the staff.

The emphasis of the Center is upon research. It is the aim of the Center, as it is of most institutions dealing with child development, to contribute to the present knowledge of the development of children. The problems under investigation have been various but the majority have been studies of the psychological and physical development of normal children and investigations of some factors underlying the development of behavior problems. The parent-education groups have enabled the staff to carry on some experimental investigations of family relationships as they influence the physical and mental growth of children. The Center has been interested in the influence of a social group upon the development of personality. At present the problem of foremost importance is the development of objective quantitative tests of personality development.

The large number of experiences which a child has in his everyday life are often overlooked in the evaluation of his abilities and personality. As an example, children are often adept in specific skills although they have had little or no specific practice. Structural maturity is often given as the reason for the development of abilities but in careful observations of children's behavior it is seen that their everyday activity gives them practice with many muscles which are later utilized in acts of skill. Investigations are now under way to determine the relative influence of structural maturation and practice during ordinary everyday activities on the adequacy in motor skills.

By means of these investigations it is hoped that a better insight can be gained into the factors influencing the development of special abilities, motor skills and personality of young children and into the causes of deviations of normal social behavior. The data obtained are not only valuable for the development of general principles but also make possible better interpretation of the development of the individual children studied. . . .

The work of the Nursery School Section of the Washington Child Research Center has also been filmed. There are about fourteen hundred feet of moving picture film of 16 mm. size which will project to 45 x 60 inches, showing the physical facilities of a child study center, the types of apparatus and their use, the routine of the preschool children, the technics of teaching, the regime for a full day, the type of physical and psychological studies and some typical research studies.

These moving pictures may be used to advantage in teaching students and teachers, for class work, for parental education groups and in lectures to the public.

Copies of the film consisting of three large reels may be bought for $90.00 (the actual cost of the raw film). The film may also be rented on the basis of $10.00 for each thirty-six hours.

The list of publications of the Center may be obtained on request. The report of its activities may also be obtained there for 25 cents. Address: Washington Child Research Center, 3209 Highland Place, Washington, D. C.

This new address will show friends of the Center that it has left its cramped quarters on Columbia Road. It is now located in Cleveland Park, the pleasant residential suburb between the Cathedral and the Bureau of Standards; there it occupies a large, fairly new house with spacious grounds and will have ample room for two and possibly three groups of children instead of the one to which it has heretofore been limited.—ANNA E. RICHARDSON, *American Home Economics Association, Washington, D. C.*

Home "Tinkering" for Girls and Home Economics for Boys. Boys will be boys—sometimes, and sometimes girls would be boys and boys would be girls. At least there are times when girls and women wish for the ability to do some kinds of work ordinarily done by men, and certainly all men sometimes find themselves so hungry they would gladly cook their own supper.

Realizing the desirability, both of having students in home economics receive at least a minimum of training in many of the small mechanical duties common in any home and of having those in industrial arts getting some knowledge of food selection and preparation, several junior high school classes in the schools of Muncie, Indiana, were alternated during three weeks, the girls taking industral arts and the boys taking work in foods.

When first discussing the possibility of exchanging classes, both boys and girls were somewhat skeptical. The boys especially were not anxious to go into the kitchen, but after a few days trial both boys and girls were enthusiastic about their new work and would gladly have extended the time to include a more comprehensive course.

The boys spent some time studying the selection of foods. One day the classes went as a group to the cafeteria and selected their lunches, the manager scoring their trays. The remainder of the work was done in preparing enough kinds of dishes to make a balanced lunch and then serving the lunch, with emphasis on service and table manners.

Most of the industrial arts work done by the girls centered around the use of the common woodworking tools such as saws, hammer, plane, and screwdriver, and in refinishing home furniture by the application of paint, enamel, and varnish. In addition, some practice was given in

correcting troubles that occur frequently with common household electrical devices; typical units of instruction here were the testing and replacement of fuses, and the repairing of extension cords on irons and lamps.

Teachers interested in similar courses will easily think of other units which offer equal possibilities in training boys and girls to be more independent.—ELLA HOLLENBACK, *Publicity Chairman, Home Economics Department, City Schools, Muncie, Indiana.*

Christening a New England Farmhouse as a Home Management House. It seems especially fitting that the home management house recently opened at Massachusetts Agricultural College should be a prerevolutionary house typical of the Connecticut Valley architecture of a hundred and fifty years ago. This house was the farm home originally built on the land purchased for use as a college campus. The process of restoration has preserved its quaint charm and saved another of the fine old New England farmhouses for future generations.

An especially interesting feature has been the generous cooperation which the resident staff has received. In the department of agricultural engineering, an assistant professor, who is also an architect, gave valuable help in the preliminary planning. Another member of the same department made the wrought-iron reproductions of the old hinges, latches, and sconces. The extension specialist in home management gave much assistance in planning for efficiency in the arrangement of the kitchen, laundry, and house closets. The department of landscape gardening is making plans for laying out the grounds, using plantings of native shrubbery about the house and developing a social garden at the rear of the house.

As the appropriation granted by the legislature was barely enough to restore the house itself, the Advisory Council of Women very willingly undertook the responsibility of raising money for furnishings and equipment. The members of this Council represent different sections of the state and various organizations of women, including the New England branch of the Women's National Farm and Garden Association, the State Federation of Women's Clubs, and the Hampden County Women's Club. Their active interest brought the women's work of the College before many people who might otherwise not have known of this development. The effort of the home economics sections of the State Grange is especially significant, for after pledging themselves to raise $500, they turned over the sum of $1,172.40.

A member of this Advisory Council worked out the beautiful christening service which was used at the opening of the house, and which the division of home economics at Massachusetts Agricultural College will be very glad to share with others who are planning for the opening of a new house. This ceremony included the old traditions of sprinkling the hearth with pure water, nailing a horse shoe above the door, crossing fertile stalks of corn across the top of the door, lighting the first fire, the "show of plenty," and the first drawing of the window shades. Dressed in colonial costumes, members of the senior class participated in the beautiful service, typifying the spirits of happiness and hospitality, plenty and good fortune, the new home and modern science, contentment, sunshine, and light. Most appropriately the home was christened "The Homestead."—EDNA L. SKINNER, *Division of Home Economics, Massachusetts Agricultural College, Amherst.*

The Watermelon and the Press. When does a vitamin tickle the risibles of the news editor and turn from a sober, scientific fact into something entertaining to readers of small-town weeklies, cosmopolitan dailies, and national magazines? Just send out a press release, saying ever so sedately that watermelon has been tested and found rich in vitamins A, B—as the Bureau of Home Economics recently did in connection with the work formally reported on page 680. Immediately hard-boiled editors are in high good humor. Memories of boyhood raids on starlit watermelon patches begin to quicken, and in a few minutes the editorial typewriter clicks out that "science is sometimes benevolent" and has discovered "vitamins de luxe." The *Country Gentleman* declared itself all but bowled over by the news but soon managed to strike its best editorial stride:

> Vitamins in watermelons! The idea seems incongruous, almost grotesque. You think of watermelons as belonging to a realm of cool cellars, dusty fairgrounds, friends and jollity, the shady side of a farmhouse on a lazy Sunday afternoon, a green canopy of trees, and the song of the katydid at twilight. You remember perhaps a black night, the bark of a dog, a breathless spring, and adolescent pantaloons torn on a barbed-wire fence. You recall the singsong chant of a peddlar, melons on a bed of straw, and the things a quarter used to buy. Why, the watermelon is a symbol, almost, of the sweet, drowsy depths of summer!
>
> Yet the fact must be faced. The watermelon, which for generations has been regarded only as a form of entertainment, now quite unexpectedly takes its place as a public utility, along with such things as household electricity, spinach, gasoline, and long-legged cotton underwear. . . .
>
> It is not for us to question the Department's analysis of watermelons, yet to the lay mind, the procedure used in determining the vitamin content does seem a bit

strange. The luscious, red flesh of Tom Watson melons was fed to albino rats and guinea pigs, and the carefully tabulated reaction of the animals indicated the presence of vitamins. A scientific method, doubtless, but offhand it is a little hard to understand why twelve-year-old boys were not used as experimental subjects, instead. After all, what does an albino rat or a guinea pig know about watermelons?

But the matter has been officially settled by the Government, and quibbling will not change the verdict. Watermelons contain vitamins. The private virtue of a mellow old friend has been heartlessly exposed.

The *Pittsburgh Headlight* [Kansas] lost no time in passing on the good word to mothers:

The news from the agricultural department ought to brighten the lives of many careful mothers who are rearing their youngsters on vitamin schedules. It is not easy to imagine a mother speaking thusly to her young hopeful: "Now you must eat that slice of watermelon, honey, because it is good for you." Nor is it easy to see the frown on the face of a boy ordered to eat a big portion of melon because it is beneficial to his growth.

Said the *Democrat-Leader* of Davenport, Iowa,

The timeliest diet item we have seen for some time comes from Washington to the effect that the Government scientists find valuable vitamins in watermelons. The luncher who likes his melon can eat it now with the comforting thought that it is doing something besides relieving his thirst and protecting him from waistband expansion. . . .

Going on to describe the experimental method, this editor concludes:

It is unnecessary this time for any so-called anti-vivisectionist to rise up and invoke the law against cruelty to guinea pigs. They seem to have had a most enjoyable time.

Even the *New York Sun* could not resist the watermelon appeal:

Experts employed by the Bureau of Home Economics have made an extensive study of the Tom Watson watermelon. Anybody who doesn't know what a Tom Watson is doesn't know his watermelons. It is very much liked by whites, Negroes, tenant farmers, plantation owners, waiters, bankers, divorcees, spinsters, Congressmen, doctors, and clergymen—especially clergymen. . . .

As a result of these learned labors the bureau is able to report with full confidence that Tom Watson watermelons are good to eat, that they supply things needed for man's growth and physical wellbeing, and are especially nourishing to the teeth and other parts of the body. This discovery performs a great and useful service. It is an open secret that there are cynics who in their hearts questioned the health-building qualities of the Tom Watson melon. There were even those who professed to find something uncouth and barbaric in the fondness of some persons for Tom Watsons. But in the face of this verdict from the Bureau of Home Economics, the scoffers have been thoroughly and decisively squashed.

These and a sheaf of other editorial comments from north, east, south, and west found their way to Washington. We are keeping them all against the time some society or other collects votes for the most popular American fruit. If the voice of the press indicates anything, watermelon will have ardent supporters.—RUTH VAN DEMAN, *United States Bureau of Home Economics, Washington, D. C.*

Clothing Expenditures of College Girls. Girls in two widely separated colleges have provided the data for this study. About half of them were enrolled at Florida State College for Women, where the work was done during 1927 and 1928. The others were students at Iowa State College in 1929.

In all, 341 girls listed the actual amounts expended for clothing for one calendar year, the various articles purchased being classified under the following headings: outer garments (coats and other wraps), inner garments (dresses and similar garments), underclothing, hats, shoes, hose, and miscellaneous. Averages of expenditures under each classification were worked out and also the proportion of the total expenditure represented by each. These averages were compiled for the whole number of girls, for the ten whose clothing expenditures were lowest, and for the ten highest.

The expenditures for the 341 girls ranged from $45.12 to $1,130.60, with 30 spending less than $100 during the year and 36 spending more than $500. The general average was $280.13; the average of the ten lowest, $57.49; and of the ten highest, $939.04.

Average proportion of total clothing expenditures devoted to different classes of garments by 341 girls by the ten reporting the highest and by the ten reporting the lowest total expenditures

GIRLS INCLUDED IN AVERAGE	OUTER GARMENTS	INNER GARMENTS	UNDER CLOTHING	HATS	SHOES	HOSE	MISCELLANEOUS
	per cent	*per cent*	*per cent*	*per cent*	*per cent*	*per cent*	*per cent*
All	18.81	37.46	11.32	5.57	12.24	7.07	7.53
Ten highest	30.90	37.72	8.90	5.13	8.27	3.98	5.10
Ten lowest	6.75	12.23	16.51	9.32	28.11	20.26	6.82

The distribution of expenditures among the various classes of articles is shown in the accompanying table. From this it will be seen that as the total clothing expenditures decreased, the proportions spent for underclothing, hats, shoes, and hose tended to increase and those for outer and inner garments, to decrease. Thus, in the group with the

lowest total expenditure, almost one-half of the total went for shoes and hose, including 28.11 per cent for the former and 20.26 per cent for the latter. For hose alone, as much was spent as for both outer and inner garments. Of these ten girls, six bought no new outer garments during the year and two of them, neither new outer nor new inner garments.

On the other hand, among the group with highest clothing expenditures, over two-thirds of all they spent went for outer and inner garments, 30.90 per cent for the former and 37.72 per cent for the latter; while only one-eighth or 12.25 per cent went for shoes and hose. Nevertheless, for seven of these ten girls, the amount spent for shoes alone was greater than the yearly amount spent for all clothing by any girl in the group with lowest expenditures. Among the ten highest girls, the average amount expended yearly for shoes was $77.70. How far Dame Fashion has determined this distribution of clothing expenditures for college girls by bringing in the short skirts and the consequent demand for silk hose and well-dressed feet can only be surmised.

The general average for all 341 girls shows a more equal distribution of expenditures among the different classes of garments. The highest figure, or 37.46 per cent, is that for inner garments. About half as much is found to be spent for outer garments, shoes, and hose and about one-third as much for underclothing. The proportion spent for inner garments by the girls with the highest clothing expenditures is almost identical with that for the general average. The actual expenditures are, however, quite different, being $104.95 for the general average and $354.16 for the smaller group. The same is true for hats, the average for all the girls being $15.59 per year as compared with $48.20 for the ten with highest expenditures.

Comparisons were also made between the average clothing expenditures of the girls in the northern college and those in the southern college. The average clothing expenditure for the Iowa State College girls was $294.48 and for those at Florida State College, $266.52. While the highest and the lowest expenditures were found among the girls in the northern college, those from the southern college included 23 of the 30 which were less than $100 and 22 of the 36 which were more than $500. In the southern college were also found nine of the ten lowest total expenditures and six of the ten highest. Apparently, then, variations of expenditure are quite as marked among the girls in the southern college as in the northern.

The girls in the northern college spend twice as much for outer garments as those in the southern college, but the latter spend a fourth more for inner garments and twice as much for underclothing. Climatic con-

ditions are probably responsible for these differences. In the highest expenditure group, it was noted that each of the four northern girls had purchased a fur coat during the year, and that five of the six southern girls spent more for inner garments than did the northern girls. The southern girls, apparently, had a greater number of dresses. The northern girls spent slightly more for shoes and a third more for hose than the southern girls. This difference can possibly be explained by the fact that Iowa State College girls have longer distances to walk between classes than the Florida State College girls and, therefore, the wear and tear on shoes and hose is much greater.

Although the average proportion devoted to each class of garments could, no doubt, be considered suggestive for planning a well-balanced clothing budget for a college girl, the study also makes it evident that differences of locality and of climate must be taken into account in deciding what is a proper distribution among the different classes of garments.—CALLIE MAY BLISS, *Iowa State College of Agriculture and Mechanic Arts, Ames, Iowa.*

EDITORIAL

Home Economics Teaching and the General Federation. The Division of Home Economics Teaching of the General Federation of Women's Clubs, of which Mrs. Joseph C. Gawler is chairman, has for some time been working on a program for the promotion of home economics education as part of its efforts for the improvement of American homes. Many home economists will be glad to be reminded that the original impetus for this support to their cause came from Helen Louise Johnson.

A first step was to make a survey of the conditions under which home economics is taught in the public schools. This was done by means of a questionnaire or "outline for club study," whose findings, tabulated by questions and by states, indicated that ideals had not been universally reached in the character of the work offered, in the provision made for it, or in the recognition accorded it.

Having thus learned some of the places at which home economics seemed to need strengthening, the division next attempted to draw up a "definite plan for clubs to follow in uniting with governmental and other interested agencies in a program for the promotion of home economics education." To aid in this, a conference was arranged in Washington in January, 1930, between the representatives of the Federation and of other agencies especially interested in the problem, namely, the United States Bureau of Home Economics, the Federal Board for Vocational Education, the American Home Economics Association, and the National Education Association.

As a result of the discussion and suggestions at this conference, Mrs. Gawler prepared a twenty-two-page leaflet which was issued in May. Besides summarizing the survey and the conference, it contains definite suggestions of work for club women. Mentioned first because so many requests had been received for it, was the suggestion that advisory committees of club women be formed to confer with school executives. The precaution was taken of repeating the many requests that these be made up of "intelligent, understanding women," and of outlining their duties to include study of state or local conditions as a first step toward suggesting changes. In line with this were the specific suggestions presented by the American Home Economics Association·

1. A study of the present requirement for certification of teachers of home economics in each state, and an inquiry through the state department of education concerning the tenure of service and training during tenure of these teachers.
2. A study by the women of the present content of state courses of study in home economics with suggestions as to further developments in light of their knowledge of home conditions and possibilities for closer correlation with practical needs of the child and the home.
3. Study of methods for teaching child care and training, family relationships and the other aspects of pre-parental education for the purpose of determining those best adapted to different age levels and to state or local needs.
4. Study of physical facilities for home economics work in high schools.
5. Stimulation of educational studies with special reference to home economics.
6. Encouragement and support of scientific research in the subject matter of home economics.

More detailed suggestions of the same general tenor were made by the Federal Board of Vocational Education and, at the request of the Federation, the Office of Education contributed a brief general statement of what is generally considered suitable, physical equipment for home economics work—an outline by means of which a club may form some judgment of the adequacy of what is now provided in a given place or what should be asked for.

In addition, general suggestions were included regarding the value of home economics for boys, of home economics research, of suitable publicity for home economics in the schools, with a section on "mothercraft," and a list of references easily available to club women.

Home economics have reason to be grateful for this helpful and intelligent presentation of the subject and will certainly stand ready to be of every possible aid to clubs that adopt the excellent suggestions made by Mrs. Gawler and her Division.

World Power Conference. The Second World Power Conference, held in Berlin, June 16 to 25, brought together an imposing number of administrators, technicians, and economists interested in the development and utilization of power and its effects on national and world economy. The first such conference was held in 1924 in connection with the Wembley Exhibition, and was participated in by 47 nations. As many took part in the Berlin Conference, at which President von Hindenberg was honorary president and prominent officials served in other capacities. President Hoover and former Secretary Weeks were among the honorary chairmen of the American Committee, of which the chairman was O. C. Merrill of the Federal Power Commission.

The main subject around which the discussion centered was "The Development of Power Supply and Power Utilization." One division dealt with the applications of electricity to industry, and under this, in turn, came the development of the domestic use of electricity. The American Home Economics Association was invited to contribute to the latter and last summer appointed a committee to prepare a paper. The members were Alice L. Edwards, Myra Jane Robinson, Mrs. Mathilde Hader, Eloise Davison, and Hildegarde Kneeland; and the subject chosen was "Applications of Electricity to Domestic Use." Like all papers prepared for the Conference, it was sent in several months ago and printed for distribution at Berlin, being presented orally only in summarized form. It will appear in full in the published proceedings of the Conference; but since these will not be easily available to many interested home economists, the JOURNAL OF HOME ECONOMICS obtained permission to print it. The version which appears on pages 631 to 640 is slightly revised from the original, the changes consisting chiefly of the omission of quotations from material available elsewhere.

Aside from its general interest, the paper perhaps is significant as the first attempt to express the point of view of the homemaker before so large a group of engineers and administrators. Amid the mass of material presented to the Conference (about four hundred papers had been received in Berlin in May), it is not likely to occasion much comment; still the fact that it was asked for is a recognition of the value of the opinion of the household users of electric current and equipment.

Household Purchasing. That one principal function of present-day home economics is to help the homemaker to purchase wisely, is an old story to JOURNAL readers. So, too, is the importance of definite, reliable information regarding the merits of the goods presented for her choice in such bewildering array and with such highly developed salesmanship. Various recent articles have called attention to the movement for standards or specifications for at least certain lines of household goods —a movement in which the American Home Economics Association has been playing a leading and very active part, both by representing the consumer at conferences for the standardization and simplification of various commodities and by attempting to make homemakers more conscious of the value and possibility of purchasing by standards.

The success of the movement requires the cooperation both of manufacturers and distributors on the one hand, and of the purchasing public on the other. Familiar though home economists may be with the idea,

it is a rather new one to the public and one which still arouses some skepticism in both parties. A point frequently made by doubting Thomases of the business world is that the women will not bother to use standards and specifications, even if they are available. This puts it up to the home economists who ask for this purchasing help to show that it is actually desired by the homemakers, in whose behalf it is requested, and gives them the further task of stimulating interest among the homemakers.

Two Open Forum articles and an editorial in the March JOURNAL indicated that the committee on commercial standards and simplifications were at work on this part of their job as well as the other. One of the articles was a radio talk on "Buying for the Family," in which Miss O'Brien had shown how labels on blankets might take the guesswork out of buying and how the same principle would help in other everyday purchases. Such radio talks, the work of home economics classes, and the general publicity which the movement has received, led to such a demand for information, especially for suggestions for club study, that the committee was obliged in February to get out an outline and list of references —a hurriedly prepared, mimeographed affair issued in cooperation with the United States Bureau of Home Economics, but one which, despite its shortcomings, was in great demand. In fact, the demand continued so great that the material has now been revised, enlarged, and printed as a 24-page bulletin. The title-page reads: "Household Purchasing. Suggestions for Club Programs, Prepared by the American Home Economics Association and the Bureau of Home Economics, United States Department of Agriculture. Published by the Committee on Commercial Standardization and Simplification, American Home Economics Association, Baltimore, Maryland."

The bulletin includes a few general statements of the difficulties of the consumer in the present market and then discusses the availability and possibilities of standards and grades for foods, textiles and clothing, and household equipment, ending with the ways in which the government can help the consumer to purchase intelligently. Valuable lists of references are given under each topic. The inside of the cover bears a few paragraphs headed "Every Club Can Help:"

> As your club discusses food, clothing, equipment, and other subjects suggested here, ask members to list commodities they could buy to better advantage if labeled with facts on quality or performance (specifications in other words).
>
> Talk over the commodities suggested. Choose a few that the club as a whole considers most important. Then, everybody working together, make a list of the points on which definite facts are needed in buying each of these commodities. In

towels, for instance, what are the qualities you would like to know about before buying?

Mail these reports to the American Home Economics Association, Mills Building, Washington, D. C., or to the Bureau of Home Economics, U. S. Department of Agriculture, Washington, D. C. Either office will send record blanks if you wish them. Every report sent to Washington will help in this new plan to simplify household purchasing. Does your club wish to help?

Copies of the bulletin may be purchased for 10 cents each from the American Home Economics Association, Mills Building, Washington, D. C., and supplemental lists of references may be obtained from the same address.

Labels on Mattresses. Apropos of labelling as a protection to purchasers, and the need of their cooperation to make the label serve its purpose, is a recent press release from the Maryland Department of Health. It deals with the labels which the so-called state bedding law requires shall be placed on mattresses and other bedding—a law similar to those found in several states, in the agitation for which the National Better Business Bureau played a prominent part some years ago. Incidentally, the first paragraph of the release shows that the writer believed in a "lead" adapted to the special group of readers he wished to reach:

Housekeepers who give their down comforts a good dose of sunshine before they put them away for the summer, will be interested to know that in giving them a sunbath they are using one of the most effective methods of protecting their treasures from the ever dreaded moth. In connection with inspections of materials used in filling comforts, pillows and other bedding, made recently under the State Bedding Law, a number of moths were found in some of the articles. These were placed in a covered glass jar and kept in a dark cupboard where several generations lived and flourished for five months. When the jar was brought out again and exposed to the direct sunlight, life departed from these pests that are the despair of every homemaker.

When the Maryland Bedding Law was passed by the State Legislature in 1924, its enforcement was entrusted to the State Department of Health. The operation of the law closely parallels that of the State Food and Drug Law Under the Bedding Law, manufacturers and dealers are required to state on a label attached to each of their products, whether or not the material used in filling mattresses, pillows, comforts, quilted pads and other articles of bedding are new, or are second-hand. They must also state the kind of filling used—wool, cotton, feathers, down, or the various combinations or mixtures of these or of other materials. If the articles are second-hand, that fact must be indicated on the label and they must be sterilized or disinfected before they can be offered for sale. Stamps, bearing the name of the Maryland State Department of Health, which must be attached to the labels, are supplied by the Department. Nearly half a million of these stamps have been distributed during the past year.

Frequent inspections of manufacturing plants and of retail concerns are necessary to see that the requirements of the law are met. A check of such inspections made recently by the Department, showed that over three thousand articles which failed to comply with the law had been found during the last year in retail and second-hand stores—five hundred of them in one month—and the proprietors were notified that the articles would have to be withdrawn from sale until the requirements of the law were met. Prosecutions are resorted to only after repeated warnings have failed to bring about compliance with the law. One of the most recent, was that of a dealer who was found guilty of selling second-hand, unsterilized pillows. Mr. J. Davis Donovan, Chief of the Division of Legal Administration of the State Department of Health, who has charge of the administration of the Bedding Law, said that housekeepers could help in securing compliance with the law, if they would carefully check back on the purchases to see that the articles they buy are duly labeled and stamped when delivered.

College and University Salaries. A symposium on the salary question was arranged by the Committee of One Hundred on Scientific Research of the American Association for the Advancement of Science during the meetings in Des Moines last December, and the papers and reports of it which appeared in *Science* for April 18 are of special interest in connection with the article by Miss Morton and Miss Clark on page 653 of this JOURNAL. For example, Dr. William A. Noyes of the University of Illinois quotes statistics to show the recent increases of university salaries in comparison with those of other groups of the population and reaches the conclusion that

> it is not fair to professors that their salaries should be increased merely in proportion to the change in the purchasing value of their salaries. The salaries should be increased in proportion to the increased income of the average citizen.

Questions sent to the 146 men and women who received the degree of Ph.D. in chemistry from the University of Illinois from 1918 to 1928 brought significant information. Of the 143 who replied, 61 had been in academic work since graduation, 53 had been in industrial work, 14 began in academic and shifted to industrial, two began in industrial and shifted to academic, while the circumstances of the remaining 13 were too unusual to be included in the average. Average initial salaries were $2,407 for academic and $2,845, for industrial work. In 1928 the average for the persons who had taught for four to ten years was $3,472, while the corresponding figure for industrial workers was $5,619. The highest initial salary in teaching was $3,500, and in an industrial position, $4,800. In 1928, the highest salary for academic work was $4,500 and for industrial work, $15,000.

The point of view of the progressive business man is perhaps shown in the following quotations from the paper by Mr. Edward A. Filene:

The great system of mass production which now dominates the market . . . . depends upon scientific research for its daily programs. And because it is dominating the market, all business must adopt its methods. In the very near future, then, there will be such a demand for fact-finders that our colleges and universities will be hard put to it to furnish an adequate supply, and those who are most capable of teaching and training our youth to become fact-finders will be tempted by large salaries away from the colleges and universities into business and industrial life.

I hope, when that time comes, that our teachers will prove to be sufficiently selfish. If they are unselfish, if they are willing to sacrifice themselves and their families to the traditions of education and go on teaching in college while their wives do the family washing, we may be in for considerable trouble; but if they are sufficiently selfish, as I have reason to believe they will be, it will be up to the colleges to find a way to keep them from accepting the offers which they get. And the only way that they can find will be through raising their salaries—not to a mere living wage but to several times beyond their present level.

And how will the colleges be able to do this? The answer is that they will do it by continuing the seemingly deplorable course upon which they started some time ago, making closer and closer connections with the business world. . . . .

Thousands of teachers to-day, especially in our larger cities, are eking out their salaries with part-time commercial employment. Many of them resent the necessity for this . . . . I can sympathize somewhat with their resentment; nevertheless, it is one of the best signs of our times that the teachers of our youth all over the country are getting this practical first-hand knowledge and keeping the educational and the business orders within communicating distance. . . . .

What is most necessary now is that this unconscious and disorderly movement to blend education and industry become conscious and orderly. The schools must perceive the necessity of fusing with our new economic order, and our industrial civilization must perceive the necessity of building up, within itself, a genuine educational and cultural life.

Teachers, then, of all people, must of necessity learn the facts of our changing economic order; and when those facts are learned, I feel very certain much of the resentment against "commercialism" will disappear. . . . .

The ancient theory of business was to add a profit to the cost of production, however great the cost of production was, and search for the few customers with sufficient buying power to pay such a price. The new principle is to set a price which the masses can pay, and then to enlist all the available science in the world to discover how the thing may be produced and sold at a profit within that price. . . . .

As leisure increases and buying power increases, there must be a corresponding increase in ambition for and appreciation of the good things of life. Taste and culture then must be developed. The emotions must be educated and there must be a greater and greater development of the spiritual values as this supposedly materialistic machine civilization goes on to its logical destiny. . . . .

The new order can not be discovered in the old traditions. It must be discovered in the new relationships, and the time of the discovery will depend very largely upon

the willingness of our educators to break from the old tradition of aloofness and enter into joyous, whole-hearted, enthusiastic and constructive cooperation with this new, fact-finding, economic system.

If this be commercialism, make the most of it.

Various points raised by the speakers were emphasized in the discussion that followed, the paragraphs that follow bringing out two which seem worth quoting:

It is perhaps unfortunate that the world does not "seek out its benefactors and voluntarily offer them the reward to which they are entitled." Breuer rightly says, "The physician's primary duty is to provide a comfortable existence for himself and his dependents. That comes even before his duty to his fellow man for the simple reason that he can not do his fellow man much real good unless he is properly equipped."

In 1926 Professor William MacDonald said, "We might have had the needed endowments long ago if intellectual workers, recognizing their solidarity, had unitedly asked for them; we can have them now whenever the workers are prepared to use them and ask for them with common voice."

And finally, the significance of work such as that being done by the Committee of One Hundred on Scientific Research is well summarized in these words:

Scientific men are working together increasingly along economic lines, not to control anything or anybody, but to secure that status which will enable research men to do their best for society.

Where Farm Families Buy. If small villages have become less important than they used to be as trading centers for our farm population, the towns of from 1,000 to 10,000 in population are becoming more important, according to Dr. C. J. Galpin of the Bureau of Agricultural Economics as quoted in *The Official Record* of the United States Department of Agriculture. This change he considers as the result both of the decline in farm population and of the higher standard of farm living. The farm population has decreased from 31,000,000 persons in 1920 to 27,000,000 in 1930. The gross cash income from agriculture, however, remains $10,000,000,000 a year as it was ten years ago when it was divided among 4,000,000 more persons.

The shift of farm buying to the larger centers means that the farm population is seeking a higher grade, a wider variety, and a better choice of all kinds of goods; and that indicates that he "is no longer satisfied with family consumption in the nature of a minimum of subsistence goods. He demands for himself and children parity in standard of living."

Denver Meeting. Only the briefest mention of the annual meeting of the American Home Economics Association can be inserted in the proof of this issue: Registration, 1,057; work of local committees, fine; weather, pleasant but hot; program, successful; general feeling, excellent; new president, Frances L. Swain, supervisor of home economics, Chicago; reorganization tentatively adopted with chairman of professional departments on the executive committee of the Association; financial status sufficient for certain needed developments; 1931 meeting, Detroit, Michigan, week of June 22; 1932 meeting, in southern region. Full reports in September *Bulletin* and October JOURNAL.

Columbus Home Economics Meetings. A proper account of the meetings of teachers and supervisors held in connection with the National Education Association convention will appear in October, and several of the papers in later issues. Here we insert merely that the attendance was the largest of any such meeting and the discussions, the most animated; that the group was formally made a department of the National Education Association; that Miss Emma Jacobs remains chairman and Miss Buckley of New Jersey, secretary. The fact that Miss Buckley is also secretary of the corresponding department in the American Home Economics Association assures the closest cooperation between the two organizations.

News Notes. Because the summer months are rather "off season" for home economics happenings and because the news gatherers on whom it relies for its state news are scattered on vacations, the JOURNAL for several years has omitted news notes from its September and October issues. The next installment will, accordingly, appear in November.

Mailing of September Journal. Because so many subscribers are away the first days of September, that issue of the JOURNAL will not be put in the mails until after Labor Day.

Change of Address. This being a season for many changes of address among JOURNAL readers, they are requested to report such changes promptly to the Business Manager, 101 East 20th Street, Baltimore, Maryland, and by so doing, avoid delay in receiving the magazine.

RESEARCH

METHODS OF TESTING WATERPROOFED FABRICS

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In connection with a study of suitable materials for children's play suits, it recently became necessary for the textile laboratory at the United States Bureau of Home Economics to decide upon a method of determining the waterproof qualities of fabrics. A survey of the literature revealed the fact that there is no standard or generally accepted method. After a careful consideration of the many tests that are used to determine waterproofing, three methods were selected because of their practicability and because the necessary apparatus could be constructed at a nominal cost. A report is given here with the thought that it may be a contribution to the work on methods of testing textile materials which is now being undertaken by the textile section of the American Home Economics Association.

Drop Test. Matthews (1) describes a simple method known as the drop test which is recommended by the United States War Department and Burr (2) gives the same test as modified by the British War Office. The cloth to be tested is laid upon blotting paper on a glass plate that is supported at an angle of 45° above a horizontal mirror. Water is dropped 5 feet from a constant-level reservoir at the rate of 20 drops per minute until the drop penetrates the fabric and stains the blotting paper. The mirror serves to aid the observer in noting when the paper is stained. An average of 2 to 10 trials is taken, the larger number of trials being made on fabrics that wet through quickly. In cases of very impermeable fabrics, the test is carried on for a definite time. Some firms run it 1 to 5 hours, and the time required to wet through is taken as a measure of the quality of the waterproofing.

There seems to be considerable variation in rating these drop tests. Matthews states that "an average of 6.4 drops is obtained on a cloth sufficiently impermeable for most purposes, while 15 drops represent a very good class of cloth. To pass the War Office test, however, 60 drops are required."

The chief objection to the drop test aside from the non-uniformity of rating is that, because of the smallness of the area under test, a large number of trials must be made if the result is to be at all representative of the material. This is important because some methods of waterproofing produce an uneven fabric so that one spot is relatively very strong and another very weak in its ability to shed water. Then again, while the drop test is supposed to reproduce the conditions met in actual use, Williams (3) states that cloths of homespun character which are penetrated very quickly in this test (4 to 6 drops) are able to satisfactorily withstand rain.

In order to eliminate the difficulty of the small area, Veitch and Jarrell (4) have used a nozzle that gives 25 drops instead of one. This they call the spray test but in their work on canvas, they found that it was not as rigorous as the funnel test.

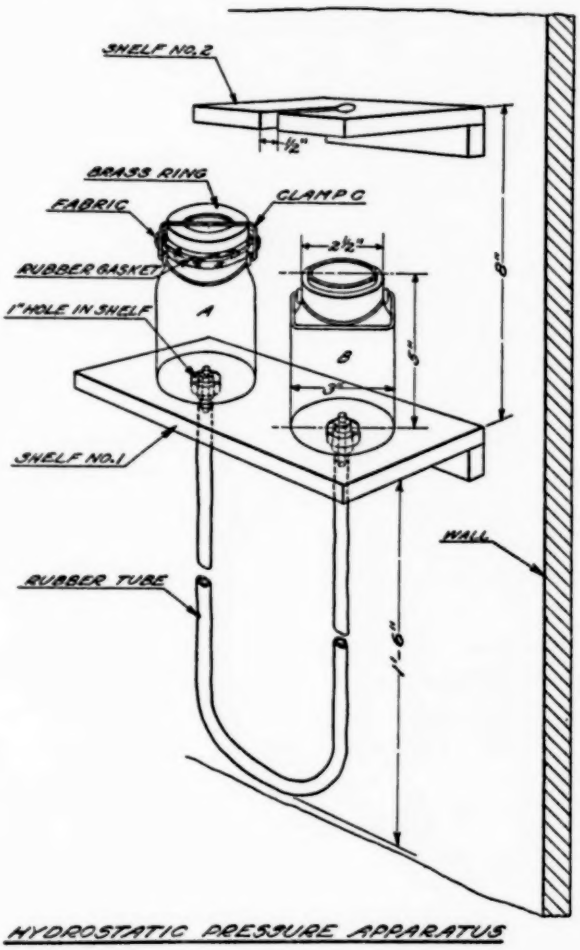
Funnel Test. A method widely used in the trade is the funnel test. In accordance with the modification of the United States Bureau of Chemistry and Soils (5), (4), a piece of fabric 10 inches square is folded with paper toweling in the form of a filter and placed in a five and one-fourth inch funnel, which has an angle of 60°. The funnel is filled with 300 cc. of distilled water at room temperature. The condition of the paper and the amount of water that has dripped through is noted after 6 and again after 24 hours. The fabrics are rated according to the scheme of Veitch and Jarrell.

The funnel test like the drop test is not alone adequate for determining waterproofing or showerproofing. It seems to be a fair test to impose on fabrics to be used as awnings or coverings where they must hold up under the strain of water standing on them for long periods of time, but this problem is seldom met with in clothing A fabric may hold up well under the funnel test due to surface tension and yet fail in a heavy rain when the drop overcomes the surface tension and penetrates between the threads.

Hydrostatic Pressure Test. The Subcommittee (6) on Waterproofing Standards of the American Association of Textile Chemists and Colorists reports that "no general test is known to be in use which is capable of interpreting the results in terms of actual performance." This committee has not made a recommendation but has published a photograph and a very brief description, giving no dimensions, of a hydrostatic pressure apparatus which is being studied.

This apparatus on the market is rather expensive, but one operating on the same principle has been constructed at the Bureau of Home Eco-

nomics at a low cost. Two pint preserving jars A and B, of the clamp type, were bored for No. 2 rubber stoppers. The jars are supported by Shelf 1 in the diagram, bored with 2 holes, each 1 inch in diameter to accommodate the stoppers. Shelf 2 is 8 inches (20 cm.) above Shelf 1 and has a narrow slot and a 1-inch hole so that jar B may be placed on it.



HYDROSTATIC PRESSURE APPARATUS

The fabric is held in position by substituting a brass ring for the usual glass cover, while a ring of sponge rubber serves as a gasket. The carpentry work was done by a helper in the laboratories, but it was necessary to have a mechanic drill the holes in the jars and make the brass and sponge-rubber rings.

The apparatus is filled with water and then the fabric is fastened in position on A. Jar B, open to the air, is raised to Shelf 2, thus putting a pressure equal to 20 cm. of water on the farbric under test. The brass ring is such that when the pressure forces the fabric up, it still does not touch clamp C. The time required for drops to appear on the upper surface of the fabric is observed. The committee report (6), referred to above, states that a pressure of 17 cm. of water for 1 hour is sufficient for showerproofed fabric and 50 cm., for waterproofed fabrics. A similar test (7) requires a waterproofed fabric to stand 20 cm. pressure for 16 hours. Following this latter procedure, the 20 cm. pressure was chosen and observation was made of the time required for the drops to appear. If, under these conditions, a fabric holds up for 1 hour without letting drops through, it is rated as showerproof.

The advantages of the hydrostatic pressure test are, first, the test area is relatively large, 4.83 square inches. Second, the water is actually in contact with the whole area under test, whereas in the funnel test, it touches only half of the fabric. Third, the pressure is uniform over the area, whereas in the funnel it varies, and the maximum is at the point of the filter, which may be a relatively weak spot in the sample and consequently may lower the rating of the fabric. Fourth, the sample required is much smaller, 4 inches by 4 inches, so this test can be used when the available sample is too small for the drop or funnel test. Fifth, the time of testing is reduced from 24 (or 6) hours to one hour; and a number of samples can, therefore, be tested in rapid succession. A comparison of the results of the fabrics tested by these three methods shows that a fabric which has stood up under the hydrostatic pressure test has also received a high rating on the other two tests. Descriptions of these methods and their various modifications are found in the literature (8, 9, 10, 11, 12, 13).

Conclusions. Although no one test of the showerproof quality of a fabric is sufficient, since as yet these have no correlation with the conditions met in service, it would appear that these three methods are all of some value. The drop test is satisfactory for very permeable fabrics; whereas the funnel test is more adapted to canvas, duck, and similar fabrics. The hydrostatic pressure test seems to be most satisfactory for testing fabrics used for showerproof clothing and is, therefore, of more interest to home economists. The simplified apparatus described here can be easily provided for the use of students in textile laboratories and may also be of value for demonstration purposes.

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THE VITAMIN A, B, C, AND G CONTENT OF WATERMELON (CITRULLUS VULGARIS)

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Watermelons seem to be one of the foods that have gained popular favor on esthetic merits alone. At least with cool crispness and attractive color rather than any particular nutritive value to recommend them, watermelons are being grown in this country in increasing numbers. The 1929 figures of the Department of Agriculture show a total of over 67 million as the crop of that one year in the United States. With this mounting production and the added importance of vitamins in our dietary regime, it seems strange that the vitamin content of watermelons has not been determined. Though their water content is high, so is that of tomatoes and many juicy fruits which have been found rich in these food factors. The literature, however, reveals no record of previous tests on watermelons.

The Bureau of Home Economics in cooperation with the Bureau of Plant Industry initiated a series of studies to determine the vitamin A, B, C, and G content of watermelons. Approximately 75 melons were used in the study which extended from June to October. For the most part, the melons were of the Tom Watson variety, which comprises about 90 per cent of the commercial shipments.

Rats and guinea pigs were used in the tests following the usual technic employed in this laboratory. In all cases only the red or pink fleshy portion of the watermelons was fed to the experimental animals.

Vitamin A. The method for the determination of vitamin A was essentially that outlined by Sherman and Munsell (1). Irradiation of the basal diet, a procedure customary in this laboratory, supplied the experimental animals with an adequate amount of vitamin D. The fresh edible portion of watermelon furnished the rats their sole source of vitamin A. The quantities fed 6 times per week to the respective groups were 0.5, 1.0, 2.0, and 3.0 grams; and the corresponding changes in weight during 8 weeks were −2.1, 22.7, 42.1, and 57.5 grams (Figure 1). The quantity of watermelon required to induce the unit gain of 3 grams per week was approximately 1.0 gram.

Table 1 gives the vitamin A content of a number of common foods previously determined by the author (2). A comparison of the vitamin A content of these and watermelon affords a basis for concluding that watermelon is a good source of vitamin A.

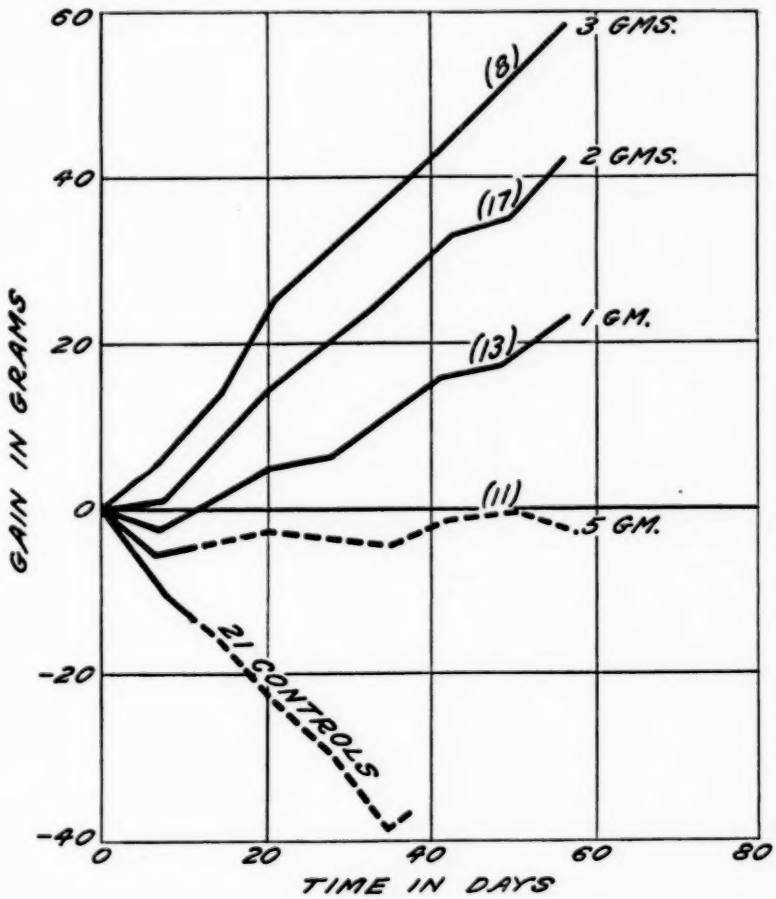

FIG. 1. CHANGES IN WEIGHT MADE BY GROUPS OF RATS FED WATERMELON AS THE SOLE SOURCE OF VITAMIN A.

Each curve is the average of results obtained from several tests, and the figure on the curve shows the number of rats in the group. The amount of watermelon fed to each animal six times per week is given at the end of the curve. The controls received no watermelon. A solid line represents the average weight for each group terminating with the first death within the group; the broken line indicates the average weight of the surviving animals of the group.

Vitamin B. The determination of vitamin B[1] was made according to a method worked out in this laboratory and based on the work of Sherman and Spohn (3). The basal diet described by them consists of puri-

[1] Nomenclature is that prepared by the American Association of Biological Chemists. (DUTCHER, R. A. Vitamin B terminology. *Science* 68, 206–209 (1928).

fied casein, 18 per cent; butterfat, 8 per cent; cod-liver oil, 2 per cent; cornstarch, 68 per cent; and salt mixture (Osborne and Mendel), 4 per cent. It is free from vitamins B and G. When 10 per cent of autoclaved yeast replaces an equivalent weight of cornstarch in this diet, vitamin B becomes the sole limiting factor for the growth of rats. This vitamin-B-free diet was designated as diet 107 G.

TABLE 1

Vitamin A values of foods

	AMOUNT REQUIRED DAILY DURING 8 WEEKS TO INDUCE A GAIN OF ABOUT 25 GRAMS IN A RAT PREVIOUSLY DEPLETED OF ITS STORE OF VITAMIN A
	grams
Apple, raw, cold storage	2.0
Banana, fresh, raw	0.4
Beans, string, green, fresh, raw	0.275 to 0.30
Carrots, new raw	0.04 to 0.05
Lettuce, bleached leaves, Iceberg	0.6 to 0.7
Orange juice, Florida	1.5
Tomato, winter, raw, fresh	0.24
Tomato, canned	0.22
Tomato, summer raw, fresh	0.24

Figure 2 shows the average gain curves of groups of rats fed respectively 3.0, 4.0, and 5.0 gram portions of fresh edible melon six times per week as the only source of vitamin B. The rats were 28 days old when the experimental diet was given and the results are shown from the age of six weeks when the growth rate indicated that the body store of vitamin B was depleted.

The growth responses of the several members of a group showed such wide variation that no definite conclusions can be made as to the relative amount of vitamin B present. However, since the average gains in weight of the groups were graded to the dose it seems reasonable to assume that the melon contained a measurable amount of vitamin B.

Vitamin G. The basal diet used in the vitamin G determinations was a modification of the one employed by Sherman and Spohn (3). As previously stated, their basal diet is free from vitamins B and G and can be made suitable for vitamin G assay by supplying vitamin B. Thirty per cent of the starch in their diet was replaced by an equivalent weight of whole white corn. This supplied an adequate amount of vitamin B and

insignificant amounts of vitamin G. This modified diet was designated as diet 107–C30.

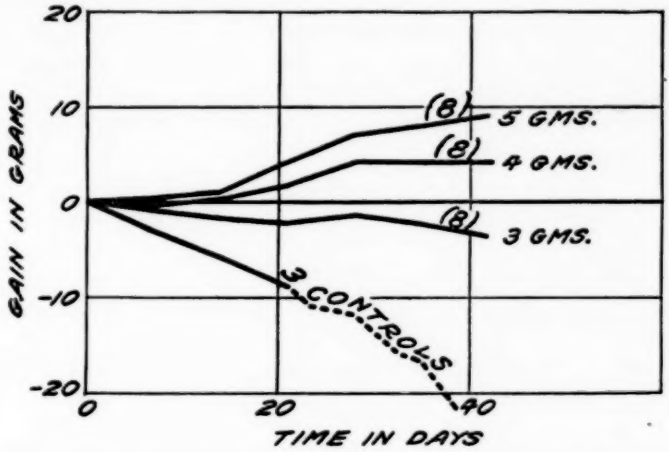

FIG. 2. AVERAGE CHANGES IN WEIGHT OF GROUPS OF RATS FED WATERMELON AS THE SOLE SOURCE OF VITAMIN B

The figures on the curve show the numbers of rats in the group, and the quantity of melon fed 6 times per week is given at the end of the curve. In the case of the controls the broken line is the average result of the surviving animals after the first death.

Groups of 28-day old rats were then given, respectively, 3.5 gram and 5.5 gram portions of the fresh melon 6 times per week for a period of

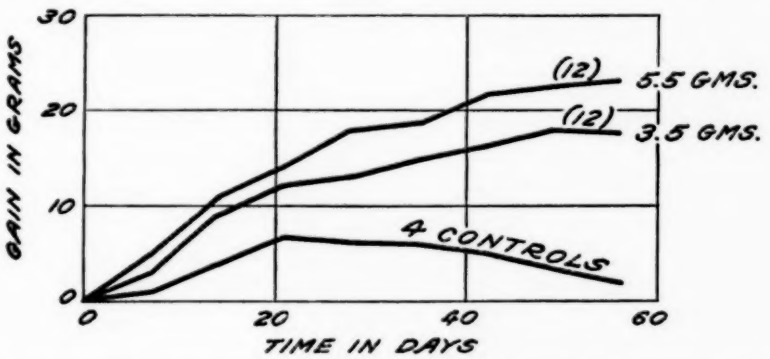

FIG. 3. AVERAGE CHANGES IN WEIGHT OF GROUPS OF RATS FED GRADED PORTIONS OF WATERMELON AS THE SOURCE OF VITAMIN G

The figure on the curve shows the number of rats in each group, and the quantity of watermelon fed each rat six times per week is given at the end of the curve.

eight weeks. The results are given in figure 3. The growth responses in this case also were very irregular within the group, although the average results indicate that growth was graded according to the amount of watermelon fed. In all cases the growth of the rats receiving watermelon was greater than that of the corresponding control animals. From this study it may be concluded that watermelon contains a small quantity of vitamin G.

TABLE 2

Results obtained with guinea pigs fed watermelon as the sole source of vitamin C

ANIMAL NUMBER	SUPPLEMENT TO BASAL DIET SIX TIMES PER WEEK	WEIGHT OF ANIMALS DURING TEST PERIOD			CHANGE IN WEIGHT OF ANIMALS DURING TEST PERIOD	SURVIVAL	DEGREE OF SCURVY SYMPTOMS AT AUTOPSY
		Beginning	Maximum	Final			
	grams	*grams*	*grams*	*grams*	*grams*	*days*	
211	Watermelon	307	305	187	−120	89	Severe
212	4 grams	349	418	390	+41	90	Mild to severe
238		339	515	465	+126	90	Mild
208	Watermelon	298	465	462	+164	90	None
210	6 grams	303	258	252	−51	90	None to mild
229		305	455	455	+150	90	None to mild
230		330	421	234	−96	65	Mild to severe
236		342	499	487	+145	90	Mild
200	Watermelon	304	327	318	+14	90	None
201	8 grams	300	379	373	+73	90	None
202		307	305	302	−5	90	None
205		328	454	454	+126	90	None
221		342	561	561	+219	90	None
225		327	515	515	+188	90	None
228		318	570	570	+252	90	None
193	Watermelon	384	540	424	+40	90	None
194	10 grams	363	432	432	+69	90	None
220		412	623	623	+211	90	None
224		340	394	371	+31	90	None
213	No test food	319	319	198	−121	21	Mild to severe
214		333	412	236	−97	38	Severe
239		322	338	170	−152	34	Severe
240		377	400	229	−148	30	Severe
241		325	325	230	−95	17	Severe

Vitamin C. The method used to determine the vitamin C content of watermelon was that of Sherman (4). A total of 24 guinea pigs were used and the feeding portions were 4, 6, 8, and 10 grams per guinea pig

6 times per week. The results are shown in table 2. Eight grams of watermelon gave complete protection during the test period of 90 days, while 6 grams just failed to protect. According to Sherman, a daily amount of 3 grams of tomato juice, which is generally considered an excellent source of vitamin C, afforded complete protection against scurvy. If this is used as a basis for comparison, the results of this study indicate that watermelon is at least one-third as rich in vitamin C as tomato.

Summary and Conclusions. Feeding tests were carried out to determine the vitamin A, B, C, and G content of the fresh edible portion of watermelons of the Tom Watson variety. About 75 melons were used and the tests extended from June to October.

When fed as the sole source of vitamin A, 1.0 gram of watermelon per rat per day produced an average gain of 22.7 grams during the 8-week period or 1 gram contains approximately 1 unit of vitamin A. Watermelon is, therefore, a good source of this factor.

The results obtained when watermelon was fed as the only source of vitamin B and vitamin G were somewhat irregular. However, the fact that in both cases the average gains in weight of the groups of rats were graded to the dose, denoted the presence of small but detectable amounts of each of these factors.

As a source of vitamin C, 8 grams per guinea pig per day completely protected the seven animals fed this amount during the 90 days of the test. Since this quantity of watermelon gave the same results as 3 grams of such an excellent antiscorbutic as tomato juice, watermelon may be considered a good source of vitamin C.

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BOOKS AND PERIODICALS

NEW BOOKS

Real Wages in the United States. By PAUL H. DOUGLAS. Boston: Houghton Mifflin Company, 1930, pp. 682, $7.50

This publication of the results of six years' labor on the part of Mr. Douglas and his assistants turns guesswork into knowledge on a question vitally affecting our national welfare. Probably three-fourths of the families in the United States are dependent upon wages and salaries as the source of their money income. What has been the course of these incomes during the last thirty or forty years? Have they risen, fallen, or remained the same? If they have risen, how great has been the the increase? To what has it been due? Have the earnings of some groups failed to rise while others have risen considerably? How much have changes in the cost of living offset the rise in money rates? To what extent has unemployment decreased actual annual earnings? These are some of the questions to which answers may be found in "Real Wages in the United States."

Mr. Douglas's first task was to devise a cost of living index that would satisfactorily measure changes in the purchasing power of wages and salaries during the period 1890-1926. He first worked out an index of cost of living from 1890 to 1914. To do this he secured the "most probable indexes of the retail prices of the various groups of expenditure" and combined these into one index, weighting each group by its relative importance in total family expenditure as shown by the 1901 investigation of the Bureau of Labor. For the period after 1914, he revised the index of the Bureau of Labor Statistics by taking the average of the indexes of the cost of living for each of the thirty-three cities in which the Bureau collects prices, weighting by the number of people in each city.

The next task was the computation of hourly and full-time weekly wages and earnings separately for a large number of industries and combined into appropriate group averages. He next computed and analyzed the average annual earnings of employed workers during the period studied. Averages are given for thirty-eight manufacturing industries, for transportation, coal mining, for virtually all the public service industries, government employees, clerical workers, teachers, and ministers.

In the fourth section an attempt was made to compute an index of unemployment and thus translate the average earnings of as many employed groups as possible into averages for the whole occupational group, averages that would include both those fortunate enough to have been on the pay roll and those who were not.

"The final section of the book estimates the changes in income per capita which have resulted from increased governmental and private expenditures for social purposes and from a diminution in the number of persons dependent on each wage earner for support. An attempt

(unsuccessful) is also made to measure the improvement in living standards by a comparative study of budgetary expenditures (those shown in the 1901 study of 11,156 families and those from the 1918–1919 study of 12,096 families)."

It is with satisfaction that we learn that Mr. Douglas's results show that "in 1926 the workers enjoyed an income which was approximately 55 per cent higher than during the nineties." He estimated that an increase of 35 per cent in real earnings had come from an increase in the purchasing power of those employed, from 7 to 8 per cent from a lower rate of unemployment, 5 per cent from a decline in the number of dependents, 4 per cent from the increase in the free income derived from the government, and 1 to 2 per cent from an increase in the free services provided by employers and philanthropists. All groups, of course, did not fare the same. With the exception of teachers, the purchasing power of non-manual workers did not increase as much as that of manual workers. The real earnings of teachers in 1926 were 86 per cent above the average for the nineties, the increase having come largely through a 25 per cent lengthening of the school year.

Scrutiny of the average actual money earnings of the various groups in the prosperous year of 1926 brings less satisfaction than the figures showing gains made over the 36-year period. For wage earners in manufacturing, they were $1,309; for coal miners, $1,332; for government employees in executive departments, $1,809; for farm labor, $593; for ministers, $1,826; for teachers, $1,277. With current concepts of needs these figures do not seem high.

Aside from the factual information that can be secured, many in home economics might profitably examine Mr. Douglas's study from the standpoint of method. It illustrates what the quantitative method means applied to an economic question; it illustrates the knowledge of sources of information and statistical technics involved; it illustrates the analytical power required and the ability to draw logical conclusions sustained by the evidence. It should be an eye-opener to those who naïvely assume that the student of social phenomena should collect all his own data, and to those who have never grasped what a wealth of information is actually available to those who have the ability and imagination to utilize it properly.—HAZEL KYRK, *University of Chicago.*

The National Income and Its Purchasing Power. By WILLFORD ISBELL KING. New York: National Bureau of Economic Research, 1930, pp. 394, $5.00.

This volume is the third publication of the National Bureau of Economic Research, giving results of their study of the income of the people of the United States begun in 1920. This study, as well as the second in the series entitled "Income in the Various States," represents the results of more intensive study of questions raised in the course of the first investigation which resulted in the publication in 1921 and 1922 of the notable two volumes, "Income in the United States, 1909 to 1918." Estimates are now available for the years 1919 to 1927 and for some items for 1928, and the more doubtful estimates for the earlier years have been revised. Two fields previously only superficially studied are reported upon in detail in this volume. They are the field of profits, especially that part of the income of investors derived from various classes of corporations, and the mercantile industry. Since no census of trade is available, information concerning the total values of goods sold by wholesalers and by retailers has been almost com-

pletely lacking. From his estimates Dr. King concludes that "between three-fourths and two-thirds of the realized income of the people of the nation is paid over the counter to retailers."

This volume gives very little concerning the distribution of income among income recipients, only distinguishing four income classes, under $5,000, $5,000 to $25,000, $25,000 to $150,000, $150,000 and over. It is primarily a study of the sources of the aggregate realized income. —HAZEL KYRK, *University of Chicago.*

Earning and Spending the Family Income. A Textbook in Home Economics. By MATA ROMAN FRIEND. New York: D. Appleton and Company, 1930, pp. 415, $2.00

In this book the author has brought together skillfully material that has been somewhat scattered and unorganized. Our material on family finances has in the past dealt largely with how to select articles for the family, but has touched only lightly here and there on why to select, and very lightly indeed on how to purchase and to fit purchases into the total amount a family has to spend. All three points of view are interwoven here in a way that should be helpful to teachers and students of home economics and also to homemakers.

The material is readable and interesting because expressed simply and in a personal way. Possibly no aspect of modern family life is more personal than the family income and its use. That the author recognizes this fact is shown in such division headings as "The Donhams Make Their Family Budget," "Expenditures Change as the Children Grow Up." The reader goes with the Donhams from an undesirable rented apartment to a more desirable one, knowing the rental and looking over apartment floor plans and surroundings; he studies with the Gordons a careful statement of gains and losses involved in obtaining four types of living quarters.

The presentation also encourages learning and independent thought. Each unit begins with questions that present the content of the unit. Simple charts and tables are accompanied by questions that develop their main ideas. Questions in fine print interspersed at intervals serve to break the length of the discussion, to challenge the reader to define his ideas on significant points, and—important to the teacher!—to suggest good topics of class discussion and written work. Readings for the student are also given but are sometimes disappointing because of lack of reference to recent material.

The general point of view of the book is that of making the income serve the welfare of the family and its members. This point of view is well expressed and is interpreted in definite terms except in the discussion of advancement, which is quite general.

Noteworthy features of the book are the soundness of the subject matter and avoidance of extremes, the practicable approach to family finances through plans rather than through records, an interesting and quite adequate discussion of the use of cosmetics, the inclusion of definite work on boys' and men's clothing.

"Earning and Spending the Family Income" will enrich our home economics work and deserves a generous use with high school classes and with groups of homemakers.—ELISABETH V. LACEY, *Alabama College, Montevallo.*

Food Preservation. A Textbook for Student, Teacher, Home-maker and Home Factory Operator. By W. W. CHENOWETH. New York: John Wiley & Sons, Inc., 1930, pp. 344, $3.00.

Home methods of food preservation discussed by the professor of horticul-

tural manufactures at Massachusetts Agricultural College for the benefit of home economics students and others interested in household processes, including workers in the rapidly increasing number of small home canneries operated to make profitable use of local products. The scientific reasons for various processes are simply stated; desirable equipment is described; and careful directions are given for preserving fruits, vegetables, and meats in the forms most commonly desired in this country.

Bread. By HARRY SNYDER. New York: The Macmillan Company, 1930, pp. 293, $2.50.

A collection of popular papers on wheat, flour, and bread, which, together with the introductory biographical sketch, the portrait illustrations, and the complete list of his writings, makes a suitable and attractive memorial to Professor Snyder of the University of Minnesota, a pioneer in cereal chemistry and an important contributor to our knowledge of the nutritive and baking values of different types of flours and breads.

Henley's Twentieth Century Formulas, Recipes, and Processes. Edited by GARDNER D. HISCOX. New enlarged edition. New York: The Norman W. Henley Publishing Company, 1930, pp. 809, $4.00.

"Ten thousand selected household, workshop, and scientific formulas, trade secrets, chemical recipes, processes, and money saving ideas," indexed and grouped for ready reference. Covers a wide variety of subjects, ranging from acid-proofing to yeast, and including among the rest, beverages, cosmetics, shoe dressings, toothache, waterproofing, and weather forecasting.

The New Education in Europe. An Account of Recent Fundamental Changes in the Educational Philosophy of Great Britain, France, and Germany. By FREDERICK WILLIAM ROMAN. Second edition. New York: E. P. Dutton & Company, 1930, pp. 438, $4.40.

An attempt to describe and, to a certain extent, to evaluate the changes which have taken place since the War in the education of European countries. The material was gathered by the author, partly from the literature but largely by personal contact with educational leaders. British, French, and German developments are treated with most detail, but in the present edition briefer chapters are added on the Scandinavian countries, Austria, Italy, and Russia.

Yourself, Inc. The Story of the Human Body. By ADOLPH ELWYN. New York: Brentano's, 1930, pp. 320, $3.50.

The story and description of the human body, ingeniously considered as an organism with its various parts referred to by such terms as "pump and engine workers," "transportation system," "food and fuel industries," "central government." Written for the layman by a member of the neurology department at Columbia University and including more technical information than its general plan might suggest.

The Child from Five to Ten. By EVELYN and MIRIAM KENWRICK. New York: E. P. Dutton & Company, 1930, pp. 299, $2.50.

The interests and problems of early childhood simply set forth, mainly through the accounts of real or imaginary happenings, for the benefit of parents, teachers, and doctors. The authors are two English "progressive adherents of Froebel," the senior one having been head

of the preparatory and junior form department of the Maria Grey Training College.

Problem Tendencies in Children. A Method for Their Measurement and Description. By WILLARD C. OLSON. Minneapolis: The University of Minnesota Press, 1930, pp. 92, $2.00.

A monograph which describes the methods by which a scale for measuring behavior problems and problem tendencies was developed, applied, and verified for reliability, together with the statistical material gathered as a basis for the studies. Schedules for a behavior problem record, a behavior rating scale with a statistical analysis of traits, and records of clinic cases are appended.

The Language Development of the Preschool Child. By DOROTHEA A. MCCARTHY. Minneapolis: The University of Minnesota Press, 1930, pp. 174, $2.50.

This monograph presents a study of the language used by young children in their everyday life by a method of direct observation which gives a cross-section of the child's running conversation. The subjects were 140 children between 18 and 54 months of age and represented a rambling sampling of Minneapolis's preschool population. The investigation is undoubtedly the most complete and best controlled one of its kind available and presents a graphic picture of the very rapid language development of young children.

Generations of Adam. By A. L. WOLBARST. New York: Newland Press, 1930, pp. 355, $3.50.

A frank, dignified discussion of sex in the relation to the individual and to society by a New York physician who believes that "the unscientific and unnatural attitude toward sex and its manifestations which have been fostered by theology and supported by the state are largely to blame for the sex problems of present society and that the solution depends upon an honest consideration of their biological and sociological aspects."

The Psychology of Religious Adjustment. By EDMUND S. CONKLIN. New York: The Macmillan Company, 1929, pp. 340, $2.50.

A professor of psychology at the University of Oregon here attempts to "bring together facts and psychological interpretations of religious conduct, and to consider them in the light of contemporary psychological thought"; and in so doing, to keep within the field of psychology as distinct from those of theology and religious philosophy and to avoid bias for or against any religious doctrine or belief. Of special interest to those concerned with child development and family relationships will perhaps be the chapters dealing with growth changes in religious behavior.

Toward Civilization. Edited by CHARLES A. BEARD. New York: Longmans, Green and Company, 1930, pp. 307, $3.00.

A symposium on the characteristics and trends of modern life as seen by engineers and other technologists. Essays of special interest to home economists are perhaps the one on "Power" by C. F. Hirshfeld, on "Art in the Market Place" by Richard F. Bach, on "Work and Leisure" by Lillian M. Gilbreth, and on "Education and the New Age" by William E. Wickenden.

ABSTRACTS FROM PERIODICALS

CHILD DEVELOPMENT AND PARENTAL EDUCATION

EDUCATIONAL METHODS

Status of the child, PHYLLIS BLANCHARD. *Am. J. Sociol.* **35,** 1085–1090 (1930).

"The latest available statistics on birth rate, infant mortality, and size of families are given. Growing recognition of the importance of the early years is indicated by the increasing number of nursery schools and centers for research in the psychology of the preschool child. Contemporaneous trends on the applications of social work to child welfare problems are shown in the rapid development of child guidance clinics. The popularization of child study for parent education is another important social movement. Both welfare work and research are placing more emphasis upon the social relationships of the child."

Child Study **7,** No. 9 (1930).

A number devoted mainly to discussions of the development of skills and interests that provide for the wise use of leisure, including the following:

Not bread alone, ARTHUR POND, 257–259;

Handicrafts and hobbies, WALTER A. DE SAGER, 259–261;

Interests and skills at school, GERTRUDE HILDRETH, 261–264;

In camp youth serves itself, RALPH C. HILL, 264–266;

Leisure and the future of America, JOY ELMER MORGAN, 270–271.

An experimental study upon three hundred school children over a six-year period, N. D. M. HIRSCH. *Genetic Psychol. Monographs* **7,** 493–546 (1930).

More than 300 children, nearly all of Anglo-Saxon stock, between 6½ and 8 years of age and from First B to Second B school grade, representing 5 economic levels in the school population, were each given 6 mental tests at intervals of approximately a year under carefully controlled conditions to determine: (1) the constancy of the intelligence quotient, (2) the relation of emotional stability to general intelligence, (3) the relation between anthropometric data and general intelligence, (4) the relation between certain sociological data (size of family, age of marriage, etc.) and general intelligence, (5) the relationship between economic status and general intelligence. The data presented are analyzed, with emphasis upon the relative contributions of heredity and environment to the results; the literature is reviewed; and a bibliography of 27 titles is given. It is shown that the degree of constancy of the I.Q. is high and predictable with a high degree of accuracy in all but a small percentage of cases; that children who are superior in intelligence are superior in emotional stability; that there is a 0.5 correlation between economic status of parents and their children's I.Q., probably indicating that intelligence is the greatest single causal factor in economic well-being; that no significant differences due to anthropometric types could be demonstrated; that the most intelligent child is the only child of the family, and progressively, the more children in the family the lower their average intelligence; that the more intelligent families are less fertile in each succeeding generation; and that the periods between generations increase in direct proportion with intelligence.

Some results secured in a psycho-educational clinic, PAUL A. WITTY. *J. Applied Psychol.* **14,** 160–177 (1930).

This report of the types of tests used in a clinic set up to train graduate students

in methods and to provide diagnostic service to the community and of the results obtained with it in the preschool clinic and in typical case studies, shows its value not only to the individual child but to parents and teachers as well.

An analysis of thinking reactions of white and negro children, LYLE H. LANIER. *J. Comp. Psychol.* **10,** 207–220 (1930).

Results obtained with an ingenuity test given to samplings of 12-year-old white and negro children in three widely separated cities show the greatest differences to lie in the speed, in which the whites are superior. The negroes are better in the trials, unclassified and logical errors criteria; while the whites are better in the total time required to learn the problem, in perseverative errors, and in rate of response.

The change in intelligence quotients in behavior problem children, A. W. BROWN. *J. Educ. Psychol.* **21,** 341–350 (1930).

The records of 707 problem children who had been tested two or more times over a period of years, studied to determine the amount of variation in the I.Q., to compare these with the variations observed in normal children, and to discover under what conditions large individual variations occur, show that the average variation in the I.Q. is small, 5.8 points; but since large variations occur in individual cases, no single rating should be considered adequate for a given child; that the average of fluctuations is little greater than that for normal children and not significantly different for boys or girls; that the time interval between tests up to four years has no significant effect on the change in rating; and that problem children of average intelligence vary more in ratings than do feeble-minded. Significant factors in those cases in which the ratings varied by more than 12 points are listed.

A study of the mental growth of dull children, L. R. WHEELER. *J. Educ. Psychol.* **21,** 367–378 (1930).

A survey of previous studies shows that while the scales used to measure mental growth are subject to criticism and variation, the individual I.Q. may be considered fairly constant. The data presented in this study, obtained by trained investigators with public school children, using group intelligence tests, relate to a group with an average I.Q for four years of below 90, the median being 82.9. They show no marked sex differences in mental growth from 6 to 11 years of age; the same rate of mental growth for 4 consecutive years for both the 6 and the 7 year age groups; and a decreasing increment in mental growth in the combined group from 6 to 11 years of age. Thus, the average dull child is mentally retarded about one year when he enters school, and this retardation increases until at age 10 to 11 he is retarded over two years. The importance of special classes and differentiated curriculum for dull children is emphasized.

Study of the school progress of the left-handed pupil, W. G. WISELEY. *Ohio School* **8,** 144, 176 (1930).

In a study of 18,560 pupils, 4 per cent were found to be left-handed and 4 per cent had changed from left to right hands for writing. Six per cent of the right-handed, 12 per cent of the left-handed, and 15.8 per cent of the left-to-right transfers were grade-repeaters. It is pointed out that teachers should be patient with left-handed pupils since the latter must translate right-handed instruction to their own methods, appear to be slower to comprehend directions, and are handicapped by classroom seat-

ing arrangements. The author concludes that while no one is exclusively one-handed, preferred handedness should not be changed.

The nature of special abilities and disabilities, WALTER F. DEARBORN. *School & Soc.* **31,** 632–636 (1930).

Special disabilities in reading and learning to read are shown to result frequently when natural, sinistral preferences of hand or eye are replaced with the dextral movements required in our reading and writing, or when lateral dominance is not established and faulty word images are stored in the mind. Case studies show that when such disabilities occur in intelligent children, a special compensatory ability, such as mechanical, artistic, or mathematical skill, is frequently developed.

Child study at the University of California, HAROLD E. JONES. *School & Soc.* **31,** 674–677 (1930).

The cooperative program described makes use of members of the faculties and a very large group of parents, teachers, and physicians and includes a survey of infants born in the vicinity, an intensive study of the development of 60 selected cases, a study of two comparable groups, one of which has had habit clinic training, studies of identical and fraternal twins, various research problems in the nursery school, and similar investigations.

An experiment in self-directed education, H. D. WILLIAMS. *School & Soc.* **31,** 715–718 (1930).

A group of delinquent boys, given a well-equipped room in a technical high school, with free choice of occupation so long as they kept busy and annoyed no one, with supervision and encouragement in their special interests, not only made good social adjustments but an average gain of 15.2 months in educational age during the 5-month period, a higher gain than expected under ordinary schoolroom conditions with formal instruction.

MENTAL HYGIENE AND BEHAVIOR PROBLEMS

Delinquency: problems in the causation of stealing, H. M. TIEBOUT. *Am. J. Psychiatry* **9,** 817–825 (1930).

Using a case of stealing in an eight-year-old boy as an illustration, the author develops his belief that the application of Freud's concepts "paranosic" and "epinosic" or, as he prefers, "primary" and "secondary" gains, to delinquency helps one to observe and understand the multiple causes which motivate it. Thus, Adler's theories of motivation (strivings for power, attention-getting devices, compensatory mechanisms for feelings of inferiority or insecurity) are seen to relate chiefly to the epinosic gain and are secondary to the onset of delinquent behavior. The psycho-analytic terms "advantage by illness" and "paranosic" and "epinosic" gains may be profitably transferred to the thinking in the field of delinquency, and the idea of shifting causation implied in these terms aids in the search for the multiple factors which go to produce a delinquent act.

Some psychiatric aspects of crowded living conditions, J. S. PLANT. *Am. J. Psychiatry* **9,** 849–857 (1930).

The director of a juvenile clinic operating for six years in an area with a population of 900,000 which includes crowded industrial, wealthy suburban, and sparsely populated rural sections, with problems divided roughly on a two to one ratio between overt anti-social behavior and personality difficulties, discusses their unfinished studies of the effect on

the child of crowded living conditions. Certain traits of these children which he finds very common, very fundamental, and reasonably ascribed to crowding are: (1) difficulty in developing a self-sufficient entity; (2) destruction of illusions about other people; (3) destruction of illusions about sex; (4) mental strain from constant efforts to "get along" with others; (5) failure to develop a habit of objectification of self. Three corollary problems are also discussed: the lasting nature of these phenomena, the effect of apartment life on the child, the relationship between the development of the attitudes noted and our cultural trends. No conclusions are offered, but further consideration of the "sociological" factors in the total personality picture is asked.

Families of intellectually gifted students, AGNES M. CONKLIN. *Family* **11**, 99–106 (1930).

This study of two comparable groups of high school students, 128 in all, with I.Q.'s of 130 or above, matched as to I.Q., sex, and age, one group failing in school work and the other succeeding, was undertaken to discover the factors which contributed to adjustment in the former and failure to adjust in the latter group. Thorough physical, psychological, and personality examinations were made and complete social histories taken by a trained psychiatric social worker. While the survey shows that social adjustment in a group of one's own age is a trying adolescent problem, no significant differences in family background could be demonstrated which would account for the obvious differences in personality between the adjusted and the unadjusted boys and girls. That the causes of these differences are too subtle to be revealed by the methods used, only points to the need for more refined instruments.

PHYSICAL DEVELOPMENT

The posture of nursery school children during sleep, M. A. BOYNTON and F. L. GOODENOUGH. *Am. J. Psychol.* **42**, 270–278 (1930).

Extensive studies of sleep habits, obtained from 278 nap records of 56 nursery school children from 2 years to 4 years, 10 months of age, show an average of one change of posture in 25 minutes during an average nap period of 79 minutes; that the greatest part of the sleeping time is spent on the right side, somewhat less on the left side, still less on the abdomen, and least on the back. A slight general preference is shown for the right side, independent of handedness; where hand-preference is strongly marked, there is a slight tendency to sleep on the side opposite the preferred hand, an observation contrary to the results reported by Sidis. Children whose postural habits during sleep are most uniform, fall to sleep more quickly than do others; entire changes of posture are more frequent than any single kind of partial change; movements are less frequent during early stages of sleep.

Recent advances in the treatment of some of the common communicable diseases of childhood, CHARLES HERRMAN. *Arch. Pediatrics* **47**, 241–249 (1930).

The satisfactory results obtained through the use of antitoxins, serums, and vaccines in diphtheria, scarlet fever, measles, and whooping cough are discussed. The author feels that since real control of these diseases depends upon active immunization in infancy when the majority of deaths occur, parents should be taught the value of prophylaxis, a function which departments of health might well assume.

H. R. H.

FOOD AND NUTRITION

Contributed by the staff of the Food and Nutrition Division, Bureau of Home Economics, United States Department of Agriculture

The relative digestibility of unsweetened evaporated milk, boiled milk, and raw milk by trypsin in vitro, Z. WALLEN-LAWRENCE and F. C. KOCH. *Am. J. Diseases Children* **39,** 20–33 (1930).

Experiments in *vitro* showed that milk which was heated or evaporated is more readily digested by trypsin than raw milk. Pasteurized milk was found to be less digestible than boiled or evaporated. The increase in the trypsin digestibility of the milk appears to depend upon the temperature and the length of time that the milk is heated and is not correlated with a change in the buffer system or in the casein incidental to the heating. Possibly there is some heat-labile inhibitory constituent in the albumin portion of the whey which reacts with the trypsin to inactivate it. The authors believe that calcium and phosphorus are not involved. They hold that these results will not be significant until the effect of peptic digestion as a precursor to tryptic digestion has been studied. Whether or not the physical nature of the curd alone is responsible for the greater digestibility of heat-treated milk is still a question.—E. P. D.

New method for the determination of the basal metabolism of babies and of small children, H. L. HIGGINS and V. BATES. *Am. J. Diseases Children* **39,** 71–75 (1930).

Following the fundamental features of the basal metabolism method outlined by Benedict and Talbot, the authors offer a modification which requires an observation period of from only two to four minutes for a single test and from 25 to 40 minutes for the whole study of the child. The old method required two or three hours for its completion and did not give as accurate results as the new method, probably because of the greater restlessness of the children during the longer study period.—E. P. D.

Studies in the physiology of vitamins. XIII. The relation of gastric motility to anhydremia in vitamin-B-deficient dogs, W. B. ROSE, C. J. STUCKY, and G. R. COWGILL. *Am. J. Physiol.* **92,** 83–91 (1930).

Studies on the physiology of the stomach of dogs deficient in vitamin B showed profound disturbances in the motor function of that organ. Since vitamin B therapy reëstablished normal hunger contractions. the possibility of a physicochemical disturbance in the blood was investigated as the primary causative factor. From the results, the authors concluded "that an increase in blood concentration resulting either from restricted water intake or vitamin B-deficiency diminished the motor activity of the stomach." Since anhydremia is a systemic disorder, they did not believe that its inhibitory influence was limited to the stomach alone, though "it is not inconceivable that the decrease in general muscular activity in vitamin B deficiency may partly be due to this factor."—E. P. D.

Studies of vitamin C in fresh and canned tomatoes, B. CLOW and A. L. MARLATT *J. Agr. Research* **40,** 767–775 (1930).

The recovery type of experiment with guinea pigs was used to study the vitamin C content of tomatoes ripened under varying conditions. The recovery dos-

age of 3 grams of field-ripened, raw tomatoes was taken as the standard of comparison. Field-ripened tomatoes canned by the cold-pack method and fed within 9 months contained essentially the same vitamin C content as the standard. However, after 15 to 20 months there was a slight loss in the vitamin C content. Field-matured green tomatoes stored at a temperature of 42°F. for 3 weeks and then allowed to turn pink at room temperature (70°F.) and also greenhouse-matured green tomatoes ripened at room temperature without previous storage were as potent a source of vitamin C as the field-ripened tomatoes. Greenhouse tomatoes ripened on the vine were less rich in vitamin C than the field-ripened tomatoes. Ethylene coloring of greenhouse tomatoes did not greatly alter or affect the development of vitamin C. Vitamin C content increased as the tomato matured. Mature green tomatoes canned by the cold-pack method were a more potent source of vitamin C than raw, mature green tomatoes; and green tomato pickles contained a negligible amount of vitamin C.—H. B. K.

Studies in the chemistry of vitamin A, O. H. CADY and J. M. LUCK. *J. Biol. Chem.* **86,** 743–754 (1930).

In a study made of the action of various reagents on vitamin A in the hope of elucidating its chemical nature, sulfur dioxide completely destroyed the active principle of cod-liver oil and had no appreciable effect on the vitamin A content of a concentrated alcohol extract of alfalfa. It had no effect on the vitamin A content of alfalfa and spinach in the dry and green conditions but lessened the vitamin A activity of butter. The active principle in cod-liver oil was destroyed by phosphorus pentachloride chlorine, acetyl chloride, nitrous fumes, Benedict's alkaline copper reagent, and sodium bisulfite. After neutralization, hydrogen sulfide, ethylene, ammonia, and Benedict's reagent had no destructive action. Formaldehyde had little effect and hydrogen peroxide caused a partial destruction. Unsuccessful attempts were made to regenerate the vitamin A potency of oils inactivated by sulfur dioxide and oxygen. It was concluded that a specific atomic grouping rather than a specific molecule was responsible for vitamin A activity and that the active principle in cod-liver oil is not the same as that in alfalfa. The active factor in cod-liver oil has aldehyde properties.—E. P. D.

The lack of relationship between the development and cure of rickets and the inorganic phosphorus concentration of the blood, A. F. HESS, M. WEINSTOCK, H. RIVKIN, and J. GROSS *J. Biol. Chem.* **87,** 37–46 (1930).

Though a decrease in the inorganic phosphorus content of the blood has been regarded by many as an outstanding characteristic of rickets, the authors have observed significant exceptions in the series of studies carried on since 1922. The work here presented indicates that small inadequate doses of ergosterol added to a standard rickets-producing diet into which milk has been incorporated, caused the inorganic phosphorus in the blood or rachitic animals to become normal without any signs of rachitic healing. Cod-liver oil produced definite evidences of healing but did not raise the inorganic phosphorus level as much as the ergosterol did. Calcium phosphorus ratios as high as 80 or 90 were produced, accompanied by rickets. The authors believe that besides a systemic disturbance there is also a local disorder which prevents the anchorage of calcium and phosphorus in the cartilage and bone. —E. P. D.

Fat-soluble vitamins. XXVIII, XXIX. *J. Biol. Chem.* **87,** (1930).

XXVIII. The antirachitic value of cow's milk as modified by exposure of the cow to sunlight and to radiations from a quartz mercury vapor lamp, H. STEENBOCK, E. B. HART, B. M. RIISING, C. A. HOPPERT, and S. BASHEROV, 103–125.

Contrary to expectations based upon previous experiments with goats (*J. Biol. Chem.* **66,** 441, 1925), these studies showed that daily exposure of cows to sunlight or artificial rays from a Cooper Hewitt or Alpine Sun Lamp had no appreciable effect on the antirachitic potency of the milk. There was no increase in the milk or butterfat secretion, and the authors have concluded that some factor other than the action of sunlight on the cow causes the superior quality of summer produced milk and butter.

XXIX. Is antirachitic activation induced by ultra-violet radiations a panacea for negative calcium balances? H. STEENBOCK, E. B. HART, B. M. RIISING, S. W. F. KLETZIEN, and H. T. SCOTT, 127–137.

Because of the unexpected results with irradiated cows which showed no apparent effects of the irradiations, it seemed advisable to reëxamine former observations on goats which indicated a marked effect due to irradiation. The exposure of the goat to the radiations of a quartz mercury lamp greatly increased the antirachitic value of the milk. After a time the animal showed a negative calcium balance, which appeared to be brought on by neurological factors. It was not known whether these had a direct effect or an indirect one through some gland such as the parathyroid.—E. P. D.

A study of the antimony trichloride color reaction for vitamin A. II. The dilution curve of cod-liver oil with antimony trichloride reagent, E. R. NORRIS and A. E. Church. *J. Biol. Chem.* **87,** 139–146 (1930).

A continuation of an earlier study (*J. Home Econ.* **22,** 511, 1930) showed that the intensity of the blue color produced by the addition of a solution of antimony trichloride to the different oils was not a linear function of the concentration in any case. The type of dilution curve and the deviation from the linear was different for each oil so that no mathematical expression could be formulated to fit all cases. It had previously been noted that at very low values of blue, the dilution curves approached a linear function. If the color produced were a linear function of the amount of vitamin present and consequently of the concentration of the oil, then it would coincide with the tangent to the dilution curve at the origin. Feeding experiments showing the potency of vitamin A were found to check very closely with the relative color values of the tangent to the dilution curve near the origin.—E. P. D.

Processes for non-acid canned foods. *Nat'l Canners' Assoc'n Bull.* No. 26 L, Jan. 18 (1930).

This bulletin summarizes the sterilizing processes for non-acid canned foods and recommends that no temperature under 240°F. be employed in processing except in special cases. If the product has rapid heat penetration, very short processing at comparatively high temperatures may be used; but processing at high temperature must be very carefully controlled to ensure adequate sterilization and an edible product. Specifications for equipment (thermometers, retorts, etc.) and methods of processing are indicated. A table of processing temperatures for vegetables and vegetable products, olive and olive products, and marine products

is included, with the time and temperature recommended for various sizes of cans.—C. H. M.

Deficiency diseases and the vitamins, E. B. VEDDER. *Porto Rico J. Pub. Health & Trop. Med.* **5,** 283 (1930).

A brief discussion is given of the terminology used in vitamin investigations, and the use of a more descriptive nomenclature is urged. The author seeks a greater understanding of physiological action through his hypothesis that the vitamins serve as building stones for certain tissues. The following reasons are advanced: 1. The relative quantity of vitamin required by an animal and the rapidity of development of the corresponding disease on a deficient diet are closely related to the basal metabolic rate of the animal. The metabolic rate is proportional to the surface area, and the smaller the body, the larger is the surface area compared to the weight of the body. 2. The deprivation of any specific vitamin is followed by the degeneration of a corresponding specific tissue. A list of the specific pathological changes produced by vitamin deficiencies is offered to substantiate this hypothesis. 3. The degeneration of the affected tissue begins practically as soon as the corresponding vitamin is eliminated from the diet. The advanced changes found after the first clinical signs of disease do not occur suddenly but have been a gradual process which commenced shortly after the institution of the defective diet. 4. The curative dose is much larger than the protective dose. In the case of scurvy and polyneuritis, the curative dose is almost an exact multiple of the daily protective dose by the number of days the defective diet has lasted. Young growing animals require much larger amounts of vitamin than mature animals and vitamin is, therefore, believed to be a component of growing tissue. 5. Certain deficiency diseases are hastened or precipitated by factors that increase tissue metabolism. The statistical evidence gathered by Siler, Garrison, and MacNeal showed a greatly increased incidence of pellagra among women between seventeen to forty-five years of age, and the incidence of pellagra among women giving birth to children during the summer months (the pellagra season) was also greatly increased.

Although the required amounts of vitamins are infinitesimal, they can be of importance in tissue building just as minute amounts of iron and iodine perform normal functions.

A definite period elapses between the initiation of the defective diet and the clinical manifestations. A consideration of this point should guard against the erroneous conclusions sometimes drawn when a deficiency disease manifests itself after a protective diet has been inaugurated. The disease is a result of inadequate diet during a previous period. —A. M. P.

A diet for stock rats, L. A. MAYNARD. *Science* **71,** 192–193 (1930).

The following diet originally developed by Maynard and his associates at the Cornell Agricultural Experiment Station as a feed for young calves, has proved satisfactory for breeding rats: 300 pounds linseed oil meal, 200 pounds ground malted barley, 440 pounds wheat red dog flour, 300 pounds dried skim milk, 300 pounds oat flour, 400 pounds yellow cornmeal, 20 pounds steam bone meal, 20 pounds ground limestone, 20 pounds salt. In addition, cod-liver oil is fed twice a week mixed in as 3 per cent of the day's food. No green food of any kind is supplied.—C. H. M.

INSTITUTION ECONOMICS

Supervised lighting, LEWIS H. CARRIS. *Factory & Ind. Management* **79**, 1082-1083 (1930).

Many of the cases of defective vision among working men and women are due to faulty illumination. Because this fact is overlooked in most instances, industry suffers from avoidable spoilage, errors, personal injuries and compensation costs, and lowered plant morale. A survey of the natural and artificial lighting of any establishment should include arrangement of windows and skylights for a maximum of natural lighting; arrangement of desks or machines so that employes do not face windows; avoidance of shadows; illumination for out-of-the-way corners where valves, switches, or stairs are located; as well as facilities for cleaning lights and reflectors with a minimum of inconvenience or hazard.

Two types of pay cafeterias please hospital and personnel. *Hospital Management* **29**, No. 5, 37–39 (1930).

The experiences of the University of Michigan Hospital at Ann Harbor and the California Hospital at Los Angeles illustrate the success of pay cafeterias for employees. At the former, employees receive a definite salary which does not include free meals; but the salary rates set, allow about seventy-one cents a day for meals. The director considers the chief advantages of this system to be that the employee selects the type and quantity of food desired; cash wages are higher, thus attracting a better class of workers; the employee develops an increased sense of value of wages in relation to the work; and the food service is dignified.

At the California Hospital, employees are hired for a wage plus a definite number of meals. Meal cards or tickets are issued for the latter, those for persons entitled to three meals a day being tickets for $7.50 to be used within 10 days and issued 3 times a month; if one is used before the 10 days are over, the employee pays cash for his meals for the remainder of the period. The superintendent, believes that the cafeteria has reduced food waste but has increased the cost per meal to employees for the reason that they have a selection of food and, consequently, select the higher priced foods.

Cleaning hotel decorative fabrics, JEAN DAHL. *Hotel Management* **17**, No. 5, Section I, 439–444 (1930).

Mr. J. E. Frawley of the Park Central, New York, claims that cleaning bills could be materially reduced if upkeep is considered when decorative fabrics are selected. The cleaning of upholstery, furniture covers, draperies, cushions, and lamp shades necessitates knowledge of the fibers in the materials. Fabrics for chair covers should be tested for fading and washing. Weekly cleaning or dusting of upholstered furniture with a vacuum cleaner decreases the frequency of dry cleaning, as does the prompt removal of spots. Waterproof fabrics that can be wiped off with a damp cloth are recommended for porch chairs. Window shades of closely-woven fabric, cut with the thread of the cloth and recovered with oil paint or impregnated with pyroxylin, may be scrubbed with soap and water, rinsed carefully, and dried with a soft cloth. The life of shades may be doubled by buying them twelve inches longer than necessary, to allow for turning and rehemming. "Follow up" work and the cooperation of employees are essential to the proper care of hotel fabrics. A successful hotel housekeeper analyzes her position as being 10 per cent organizing, 10 per cent training others to carry out

her instruction, and 80 per cent "follow up" to see that the things are done right.

How best to go about planning a profitable and balanced menu, ALICE EASTON, *Hotel Management* **17,** No. 5, Section II, 263–268 (1930).

The pricing of menus is not difficult if the precaution is taken of noting the cost of the items served before figuring the menu price. Thus, if the raw food cost is taken as 40 per cent of the selling price, the latter is quickly computed by multiplying the raw food cost by two and one-half. Points to be remembered in planning profitable menus are: to make a definite appeal to the appetite; to combine attractively foods of different form, texture, and color; to visualize the menu for appearance on the bill of fare and when served; to use foods in season; to limit the selection; and to base the menu on market prices.

What the institutional buyer wishes to know about canned foods, RUTH ATWATER. *J. Am. Dietetic Assoc'n* **5,** 299–303 (1930).

A concise summary of important information for the institution buyer of canned foods, including grades and method of grading fruits, vegetables, meats, and fish, storage temperatures, and the effects of canning on vitamins.

Surveying a county hospital, a report and suggestions, JOSEPH C. DOANE. *Modern Hospital* **34,** No. 3, 61–66 (1930).

The director of the Jewish Hospital in Philadelphia advises that a definite food budget be drawn up, allowing the dietitian a specific amount to be spent per meal per person; that raw food materials be issued by the purchasing agent to the dietitian; and that the director, dietitian, and purchasing agent hold a daily or weekly conference on the type of food purchased. He discusses the purchasing procedures of his institution as regards eggs, potatoes, meat, and fruits; competitive bids are secured for most of these items and contract buying is used wherever possible.

Labor turnover—what will the hospitals do about it? J. GOODFRIEND, *Modern Hospital* **34,** No. 4, 53–58 (1930).

A study of the causes of labor turnover and its effect on the work of the institution shows that the main reasons for executive turnover are the desire of the individual to improve his position, interference by trustees of the hospital, and political influence. Other observations are that employees should receive definite assignments of specific duties on arrival; season has an influence on turnover, the freer life and higher pay in summer resorts attracting city employees during the summer season; that a commercial cafeteria for employees is more apt to make it possible to gratify individual tastes and appetites; that the scale of salaries in hospitals shows up poorly when compared with that of commercial establishments; that living quarters are frequently unsatisfactory and turnover is reduced if reasonable allowance for living outside is given; and that every employee who resigns or is discharged should be interviewed to ascertain his point of view and to discover new facts about the position he filled.

Applying the rules of nutrition to hospital feeding problems, KATE DAUM. *Modern Hospital* **34,** No. 4, 128–132 (1930).

A careful discussion of the importance of adequate and attractive food for every person fed in the hospital, including the following groups: children, who should

leave the hospital better nourished than when they entered; patients, whose recovery for psychological or physical reasons is dependent upon food; student nurses, who are growing, active individuals; medical interns, who must not only maintain their own health but should realize the importance of food in the handling of disease; hospital employees, whose efficiency and tenure of position depends largely upon good food.

The food expenditure for a well-balanced diet in the average general hospital will be divided approximately as follows: 25 to 31 per cent protein foods, 25 per cent fruits and vegetables, 10 per cent bread and cereals, and remainder for sugar, cooking fat, beverages, and other miscellaneous items.

Developing efficient food service in the sanitarium, G. L. BELLIS. *Modern Hospital* **34,** No. 5, 89–92 (1930).

Muirdale, a hospital and sanitarium for the treatment of tuberculosis, has recently changed its food service organization from pantry service to central service. Electrically heated, insulated metal carts with built-in hot water circulating system and 14 separate tray compartments are used. One hundred and fifty trays are served in 35 minutes, and the food reaches the patient without loss of heat or flavor. The advantages of central service are the elimination of separate diet and serving kitchens and the use of this floor space for patients' beds; the elimination of multiple handling of food, reduction of waste, and contamination due to exposure; the provision of affective supervision of all tray service by the dietitian; the centralization of equipment, service, and storage of food stuffs; a decrease in the per capita cost; and parallel to this, an improvement in the quality of food served to bed patients.

Selecting executives: an evaluation of three tests, R. O. BECKMAN and MICHREL LEVINE. *Personnel J.* **8,** 415–420 (1930).

The Cincinnati Civil Service Commission has been in search of tests for executive aptitude for use in selecting supervisors, bureau chiefs, and department heads. The two tried most extensively are the Allport A-S Reaction Study which measures ascendancy and submission and Laird's Personal Inventory C-2 Study which measures introversion and extroversion. A third test, which consists of following simple, written directions, has been used with some success in supervisory clerical examinations. Among the experimental subjects were thirty executives. Analysis of the results indicates that an executive should be ascendant as tested by the Allport A-S Reaction Study. There is no indication that the Personal Inventory test would be useful in selecting executives, but it is evidently of value in the sales field. The "following written directions" test showed that executives followed written directions better than applicants for other types of work; it might be used to advantage in selecting executives if finer distinction of scoring could be secured. An adaptation of the Allport test as an aid in selecting executives will be given a trial in Cincinnati.

Growth of an employee relations research study, G. A. PENNOCK and M. L. PUTMAN. *Personnel J.* **9,** 82–85 (1930).

The Hawthorne Works of the Western Electric Company have been studying employee relations for 6 years to obtain knowledge of the factors entering into the relationship between management, supervisor, and the individual worker. The study started with making an illumination survey of factors in employee effectiveness. As a result of answers to

questions relating to the employees' welfare and their attitute toward the Company, an interviewing program was established to learn the likes and dislikes of the employees. The personal values in the interview were that frequently a modification of exaggerated or distorted opinions were rectified and that the employees' desire for recognition and participation was satisfied.

Does the manager "make" the employee or the employee "make" the manager? *Restaurant Management* **26,** 99, 227–230 (1930).

Restaurant Management offered a $50 prize for the best answers to this question, illustrated as follows: The general manager of a restaurant chain inspected one of the company's units in the absence of the manager. Arriving before the luncheon rush, he found both dining room and kitchen in an uproar. The disturbance persisted in spite of the presence of the assistant manager and chef, who not knowing of the presence of the general manager, added to the confusion. In making the report to the president, the general manager recommended that the assistant manager and chef be discharged as incompetent. Instead, the president ordered the discharge of the manager, saying that the manager had not inspired his subordinates to carry on in his absence.

The following replies were published: "It's management's fault if restaurant help is 'poor,' " Cecil Draper, manager of Breese's Lunch, Fremont, Nebraska; "man-power no better than quality of management in the industry," R. J. Macdonald, assistant manager, Broadway Hazelwood, Portland, Oregon; "I would support my manager, discharge assistant manager and chef," Edith M. Arnold, proprietor, Arnold's Fish Market and Sea Grill, Putnam, Connecticut; "if I were the district manager, I would discharge the manager, W. H. Miller, manager, Woolworth's Lunch Department, Racine, Wisconsin; "the president is to blame for lack of proper functioning," E. H. Porter, proprietor, Blue Bird Tea Room, Ypsilanti, Michigan; "a waitress speaks in defense of the employee," Birdie Vinson, Savoy Hotel, Cleveland.

A chain restaurant tackles the problem of service, ZOE WOLCOTT. *Restaurant Management* **26,** 232–235 (1930).

The successful restaurant realizes the importance of good service in its effect upon patrons and makes the instruction of waitresses a part of the daily program. In the Pig 'n Whistle in Los Angeles, the personnel department employs and trains all the waitresses. Daily instruction includes technic of serving, study of the menu, and salesmanship and relation to the public. After instruction each girl is placed on trial before being given a permanent position.

Management of the summer camp, IRENE DAHLBERG. *School Feeding Management* **18,** No. 2, 10, 18–19 and No. 3, 7, 15–16 (1930).

These two articles aim to assist the food director of a summer camp. The first consideration is the choice of a site where good drinking water is available and where plenty of fresh milk, eggs, and vegetables can be obtained. The food should be good, simple, and abundant. A day's menu should include a quart of milk for every person, two or more servings of vegetables in addition to potatoes. At least one of the vegetables should be fresh and preferably green. Two or more servings of fruit a day are recommended. Either fresh or canned tomatoes may be substituted for fruit or vegetables. An egg daily is a camp food standard.

M. DE G. B. and G. M. A.

TEXTILES AND CLOTHING

Contributed by the staff of the Division of Textiles and Clothing, Bureau of Home Economics, United States Department of Agriculture

Filling the great open spaces, LEE MCCANN. *Am. Home* **4,** 179–180 (1930).

The author advocates the use of various old textiles as wall decorations. Treasured bits of *toile de Jouy*, silk from an old gown, or rare pieces of lace or brocade may be framed and hung directly against the wall or against a length of another material that will provide a becoming and emphatic background. India prints which have the power to individualize an otherwise commonplace room may be purchased in almost any size and at almost any price. The Numdah rug, with its primitive crewel embroidery, may be used to introduce an Oriental note. Tapu panels of woven tree bark in rich browns and reds are particularly suitable in oak and walnut rooms. All-over embroidered Chinese portières combine with the simpler styles of furnishings, notably Chippendale.—B. M. V.

Sanitation and power laundry methods, GEORGE H. JOHNSON. *Bull. Laundryowners' Nat'l Assoc'n* **13,** No. 4, 12–16 (1930).

In this, the last of two articles giving a survey of available information concerning the sanitary output of laundries, the germicidal value of hypochlorites (such as the Javel water used by laundries) is reported as much higher than that of carbolic acid. From a review of the results in power laundry tests and the data in regard to the bactericidal value of various temperatures, it is concluded that the modern, scientific laundry eliminates all harmful bacteria. Not only are micro-organisms reduced by comparatively high washing temperatures, the multiple suds, the agitation, and the cleaning agents, but there is the additional effect of the temperatures used in drying and pressing.—K. M. D.

Demand for pre-shrunk fabrics increasing. *Bull. Laundryowners' Nat'l Assoc'n* **13,** No. 4, 17 (1930).

Finishers who are working on the problem of supplying guaranteed pre-shrunk fabrics find that the results given for shrinkage vary according to the method of testing. Some houses are offering to shrink plain woven fabrics, but the successful shrinkage of fancy woven materials is still considered too difficult.—K. M. D.

Window treatments of the Italian Renaissance, A. L. HILL. *Good Furniture & Decoration* **34,** 237–242 (1930).

In the early Renaissance, textiles were used chiefly as backgrounds, but later in this era window draping was begun. Renaissance draperies were usually of the tie-back sort and were decorated with festoons, valances with hanging cords, and enormous tassels. The extremely gorgeous hangings of brocade, velvet, cloth of gold, and satin were used only on state occasions. Early Renaissance textiles were adorned with regular designs showing geometric figures and sometimes floral and animal motifs. Later, lines divided the groundwork into blocks and thus formed medallions in which the designs were set.—B. M. V.

The shadow of the thread, HELEN SPRACKLING. *House Beautiful* **67,** 731–735 (1930).

This article describes and illustrates a new type of stitched tapestries displayed by Georgiana Brown Harbeson in the

Architectural League in New York last February. Many of these needlework pictures were intended as over-mantel decorations and planned in cooperation with the architects who designed the fireplaces. Though the handling of the medium is modern, the tapestries interpret Chinese, Chippendale, and early American as well as present-day styles of design.—B. M. V.

The isoelectric point of silk fibroin, T. G. HAWLEY and T. B. JOHNSON. *Ind. Eng. Chem.* **22,** 297-299 (1930).

The determination of the isoelectric point (the pH value at which a substance is least dissociated) of silk fibroin (the fiber left after raw silk has been degummed) is of value, industrially as well as scientifically because manufacturing processes will do minimum damage to the silk if the wet operations are carried out at that point. To make the determination here reported, degummed silk was ground into such fine particles that it went into colloidal solution in water. This solution foamed readily and took on a yellow to dark brown color on standing and gave off half of the nitrogen of the silk as ammonia within two months. The value obtained for the isoelectric point ranged from pH 1.4 to 2.8. Analyses at present available indicate that silk is composed almost entirely of a limited number of mono-amino-mono-carboxylic acids.—O. P. H.

Silk—a field for research, E. M. SHELTON and T. B. JOHNSON. *Ind. Eng. Chem.* **22,** 387–390 (1930).

This review of the chemistry of the silk fiber points out how little is known about it, and suggests promising lines of investigation, from both the commercial and the scientific standpoint. Silk liquor obtained from the gland of the silkworm resembles strained honey, and its coagulation seems similar to the clotting of blood. If the coagulation could be arrested, its chemical constitution would be much more readily determinable than by the present method of hydrolyzing the insoluble fiber. X-ray analysis of silk fibroin indicates that it is a mixture of individual proteins of small molecular weights (300 to 400). Secondary valances may hold these together. Recently, it has been shown that saturated salt solution will bring silk fibroin into colloidal solution, a method which promises possibilities for separating the proteins of silk by differences in their solubilities.

Solving the chemistry of silk would give the rayon industry a scientific basis for producing synthetic fiber from albuminoid solutions, with more nearly the strength and elasticity of natural silk than anything now made.

The loss of elasticity which gradually occurs in silk when exposed to light, finally making it brittle and straw-like so that it breaks when folded sharply, is thought to be an oxidation process; but there is still need for developing physical methods of measuring changes in the elasticity of fibers.—O. P. H.

Cellulose as it is completely revealed by X-rays, GEORGE L. CLARK. *Ind. Eng. Chem.* **22,** 474–487 (1930).

An account is given of the fundamental structure of cellulose as worked out from X-ray diffraction studies, with the conclusion that its physical and chemical properties are explained by such structure. The structure of rayon is discussed in relation to problems of its manufacture. X-ray patterns are suggested as a possible method of classification of grades of cotton. The article is well illustrated. —R. E. E.

The enhancement of "mildew" by soaps and vegetable oils, R. BURGESS. *J. Textile Inst.* **22,** T333–T372 (1929).

The so-called "mildew" which develops on cellared or aged and stored wool goods is due to mold fungi rather than to bacteria. Soaps, wool creams, and the majority of conditioning fluids enhance the development of mildew on wool. This is due chiefly to the alkali present in these substances, which, by combining chemically with the wool, renders the latter more easily attacked. The growth of mildew is favored by the presence of vegetable oils but is not affected by mineral oils. The washing of scoured or unscoured wool in several changes of warm or hot water considerably reduces the liability to mildew. The range of conditions under which mold growth can take place on wool is considerable, both alkaline and acid reactions favoring it.—R. E. E.

Fighting the moths with scientific weapons, E. M. HUBACKEK. *Nat'l Cleaner & Dyer* **21,** 101–103 (1930).

Cleaners are urged to offer the public a more extensive moth-proofing service for rugs, upholstery, blankets, and gowns. A description is given of "Eulan" and "Konate," practical, effective moth-repellents developed by two internationally-known firms. Since these products are colorless, odorless, non-toxic, and have all the necessary moth-proofing qualities, they should interest both carpet cleaners and dry cleaners. "Eulan," a non-flammable, permanent moth-proofing chemical, supposed not to injure a fabric in any way, is soluble in water and may be applied after the last rinsing to rugs which have been shampooed. "Konate" is of particular interest to cleaners who perfer a naphtha solution and a spray application.—K. M. D.

Federal Trade Conference to be called for cleaning industry, J. J. BECK. *Nat'l Cleaner & Dyer* **21,** 109 (1930).

Plans are under way for a trade practice conference of the dry cleaning industry, the Federal Trade Commission having stated that rules approved by it for the District of Columbia are enforceable in every part of the United States against any offender doing interstate business. These rules include the following minimum specifications: Any article represented as dry cleaned shall be free from solvent or chemical odors, and restored to original hue; all spots or stains shall be removed except those which cannot be taken out without injury to the color or fabric; the original shape, dimensions, and contour of the article shall be restored as nearly as possible; the article, if re-rinsed in water-white solvent, shall not show sufficient solid residue to darken the dry solvent below 15 Saybold chronometer; the finish of the fabric shall not be damaged, except that damage which is traceable to metal weighting of silk, carbonization (of wool), or other defects of material shall not be considered as due to faulty or defective dry cleaning.—O. P. H.

Sisal dyeing, FRED GROVE-PALMER. *Textile Colorist* **52,** 165–166 (1930).

Sisal, a fiber which has come into prominence as a commercial product during recent years, is used chiefly for rope, cordage, braid for women's hats, baggings, mattings, and canvas. Although its comparative coarseness prevents the sisal fiber from being used for dress fabrics, its strength and pleasing appearance makes it suitable for various decorative materials. Its dyeing presents few difficulties, and almost any kind of coloring matter may be used. Illustrated.—R. E. E.

The relation of cotton to synthetic fibers, C. E. MULLIN. *Textile Colorist* **52**, 303–308 (1930).

Rayon is compared with cotton from the standpoints of production, uses, and properties. Detailed statistics of world production show that the United States produces more than half the world's cotton and more than one-fourth the world's rayon. Rayon production has grown to be four times as great as silk production, about one-eighth as great as wool, and about one-thirtieth as great as cotton. The United States has doubled its rayon production in the last four years.

Although at present most rayon is made by the viscose process, costs have been greatly reduced in the cellulose acetate process; and the author considers it probable that the Celanese Corporation manufactured acetate yarn for less than sixty cents a pound in 1929. Economics have been achieved in the viscose process also, and one firm has announced that it can produce viscose yarns at a lower price than cotton yarns of the same size. However, because of the many possiblities in acetate rayon (its unique dyeing properties, for example), rayon firms are building cellulose acetate plants. Cotton linters are always used for cuprammonium (Bemberg) and nitrocellulose rayons, but both wood pulp and cotton linters may be used for viscose and acetate rayons.—O. P. H.

Developments in producing delustered and low-luster rayons, ARTHUR K. JOHNSON. *Textile World* **77**, 1388–1389 (1930).

The methods generally used to bring about the delustering of rayons are unsatisfactory, both because they change other characteristics of the yarn or fabric and also because their effects are for the most part temporary, the luster returning with use or laundering. There are, however, some delustering processes which may give a lasting dull finish. Aside from "delustered" rayons, certain types of regenerated cellulose rayon are now available, made with a dull or low luster according to methods described.—M. B. H.

United States Institute for Textile Research makes its bow. *Textile World* **77**, 3243 (1930).

An industry-wide organization for textile research, representing the interests of textile associations, textile schools, and government departments, has been authorized by Congress. This organization, which is to be known as the United States Institute for Textile Research, Inc., is taking over the articles of incorporations of the Textile Research Council, Inc. It has been suggested that the organization interest itself in research dealing with the use as well as the production of textile materials.—M. S. F.

MISCELLANY

Smithsonian Expeditions to Alaska. The articles by Miss Cremeans in this and the April JOURNAL give special interest to the news that two scientific expeditions have set out this summer from the Smithsonian Institution to seek clues to the origin of the Eskimos and the first immigrants to America. One, under Dr. Hrdlička will work in southwestern Alaska; while the other, under Henry B. Collins, Jr., will go to St. Lawrence Island, which Mr. Collins speaks of in *Science* for May 16 as a strategic center of the rare, lost culture of the Arctic. Some of its villages, a thousand years old or older, he considers a likely place in which to find vestiges of the Eskimo golden age.

Electric Power. The use of power for all purposes has increased three and three-fourths times faster than the population during the last five years, according to a statement recently made by Matthew S. Sloan, president of the National Electric Light Association at a meeting of the Southwestern division of the Association.

Home Economics for Boys. Emeline S. Whitcomb has brought together examples of the home economics courses offered to boys in various public schools of the United States, as shown in the survey of home economics made for the United States Bureau of Education in 1925–1926. They appear in United States Department of the Interior, Office of Education, Pamphlet No. 4, 1930.

"Twin" Schools. The suggestion that pairs of identical twins be used for testing new methods of teaching has been advanced by A. F. Blakeslee of the Carnegie Station for Experimental Evolution. They would obviously furnish the nearest possible approach to human "control" material, and by separating a pair only for that part of the school day during which the method in question would be in use with one of the pair, there would be more likelihood of checking its effect than by any means hitherto used. According to an account in *Science News-Letter*, New York City's supply of identical twins would be sufficient for such a school.

Weaving for Indian Girls. Among recent announcements of United States Civil Service examinations was one for teachers of colonial weaving in schools of the Indian Service. Applicants were required to submit two samples of their own colonial weaving, one with yarn carded, spun, and dyed by the applicant, and the other with linen thread and a pattern border. They were also obliged to give evidence of their special training and experience in such processes and in the setting up of looms.

Soot. It is estimated that during one year there fell in the City of London 595 tons of soot per square mile, and *The Countryman* holds that the coal wasted in soot throughout the United Kingdom would heat half the metropolitan area.

Parental Education for Negro Youth. In an article in the *Southern Workman* for June, Franklin O. Nichols of the American Social Hygiene Association traces the recent rapid increase in attention given in negro schools, notably Hampton Institute, to courses intended to prepare negro youth for marriage and parenthood, including methods of introducing social hygiene into elementary and high schools.

Bibliochresis. Under this formidable name, which we discover means the scientific use of literature, Professor Hamor and Dr. Bass of the Mellon Institute of Industrial Research discuss in *Science* for April 11, the advantages of this "pilot of research" and the need for the more critical use, and for helps to such use, of our rapidly increasing library facilities.

Sanitation of Schools. Practical suggestions for teachers on heating, ventilating, lighting, and cleaning of school buildings and on the provision and upkeep of facilities for sanitation are given by J. F. Rogers in Leaflet No. 1 of the United States Department of the Interior, Office of Education.

Child Welfare and Postage Stamps. The Belgian Congo has issued a stamp which shows an ebony infant sitting proudly on the scales; it has a postal value of 5 centimes but sells for 10, the balance being used as a voluntary contribution to the Belgian government's child welfare work in the Congo.

Holidays and Candy. Candy sales increase on certain holidays by the following proportions: Valentine's Day, 9 per cent; Easter, 42 per cent; Mother's Day, 20 per cent; Thanksgiving, 23 per cent; and Christmas, 141 per cent. These figures were prepared in the Foodstuffs Division of the United States Department of Commerce and quoted in *Domestic Commerce* for April 20.

The Camp in Higher Education. The summer camps organized by colleges, universities, and other institutions to combine recreation with opportunities for practical experience in connection with certain lines of study, have been increasing rapidly and are the subject of a bulletin by Marie M. Ready. It appears as United States Department of the Interior, Office of Education, Pamphlet No. 1.

Swedish Farm Homes. In Karlstad, the home province of Selma Lagerloef, 164 farmers recently received diplomas of appreciation of the way in which their families had clung to their farms. *The Countryman* cites eight cases where the land had been in the same family since the sixteenth century or earlier, in one instance since 1360.

Chile's New Educational Program. What amounts practically to an educational revolution in Chile is described by Lucy L. W. Wilson in the June Bulletin of the Pan-American Union. Dr. Wilson spent several months of 1929 there, having been engaged by the government to direct a Dalton experimental school for girls.

Trade Secrets. "Trade Secrets as a Danger to Business" is the title of an article in the organ of the Association of German Machine Tool Factories which has recently attracted much attention in business management circles. It is published by Dr. Herman Schoening, chairman of the Association of German Machine Tool Factories and himself the proprietor of important works at Berlin. Interesting excerpts are given in the May Bulletin of the International Management Institute.

Cuban Grade Schools. The present Cuban public school program includes a six-year grade school course, followed by a four-year secondary school course. According to press reports, "in the last three years of a six-year grade school course, Cuban girls receive thorough instruction in cooking, sewing, gardening, and the

other domestic arts intended to fit them to preside gracefully over their future homes. These subjects, with physiology and hygiene, are particularly stressed in a Cuban girl's education."

The Ice Cream Industry. O. E. Reed of the United States Bureau of Dairy Industry said in a recent radio talk that 6,000,000,000 pounds of milk are annually used for the commercial manufacture of ice cream in the United States, and that in 1928, 4,000 ice cream factories turned out about 348,000,000 gallons, sufficient for a per capita consumption of 2.9 gallons. Three-fourths of the total is made from April to September.

Housing for Girls. This valuable contribution to the subject has been prepared by Jeanette Dutchess and Emma H. Phinney in consultation with members of the city department of the national staff of the National Board of the Y. W. C. A., the section on building plans being by Lena Farrar and the one on food service by Marian Hopkins. The providing of suitable housing facilities for women and girls being an essential function of the Y. W. C. A., the planning, building, and management of these residence halls are discussed concisely from the background of long experience. Diagrams of typical plans are included, as are food and house record forms and sample menus.

Radio Talks on Foods. Eight radio talks broadcast by members of Mellon Institute during 1929–30, have been brought together into an attractive pamphlet "Science in the Kitchen: the Selection, Care, and Service of Foods," which is issued by the University of Pittsburgh for sale at 60 cents a copy.

The Housing Problem in the United States. This is the title of an interesting and authoritative statement by Mr. Lawrence Veiller of what has and has not been done in regard to housing in this country, that first appeared in The Town Planning Review of England, and that is now available in pamphlet form from the National Housing Association, 105 East 22nd Street, New York City, price 50 cents a copy.

NEWS NOTES

GENERAL

American Council on Education. Speakers and subjects at the meeting held in Washington, May 9 and 10, included Dr. Henry Suzzallo on "The National Advisory Committee on Education"; Charles H. Judd, "A National Program of Educational Research"; Hon. Ray Lyman Wilbur, "Education and Health, A Community Problem"; and John C. Merriam, "The Opportunities of the Federal Government in Research."

American Dietetic Association. Dr. Kate Daum is in charge of the program for the annual convention to be held in Toronto, September 8, 9, and 10. Chairman of publicity is Dorothy Knight Hassler, Room 1118, 25 East Washington Street, Chicago, Illinois.

American Library Association. The annual meeting at Los Angeles, June 23 to 28, included many round tables devoted to special phases of library work, including those on rural adult education, on county libraries, on motion picture and visual aids, on radio broadcasting, on school libraries, on library work with children, and on work with the foreign born. Prior to the Los Angeles meetings, a pre-conference general session was held on the evening of June 21 at Grand Canyon, Arizona, for the members traveling by the Association's special train. Interesting post-conference trips were also arranged.

Chinese Institute for Educational Research. Sun Yatsen University in Canton has established an institute for educational research, the only one of its kind in China, and asks that the institute's library be placed on the mailing list of organizations publishing educational material. The University has 3,500 students and is said to render service to the whole country.

French Visitor. A recent interested and interesting visitor to home economics departments and projects in the United States has been Mlle. Paulette Bernège of Paris, president of the French Ligue de l'Organisation Ménagère, editor of its magazine *Mon Chez Moi*, well-known writer on household efficiency, and chairman of the household management section of the International Scientific Management Congress held in Paris in June, 1929.

Gorgas Essay Contest. The Gorgas Memorial Institute announced on May 12 that President Hoover had awarded the Charles R. Walgreen Prize of $500 for the winning essay in the Second Annual Gorgas Memorial Essay Contest, to Pauline Lodge, of Lakewood, Ohio. The subject was "The Gorgas Memorial; Its Relation to Personal Health and the Periodic Health Examination," and over five thousand essays were submitted by high school students from all parts of the United States.

Harvard Graduate School of Education. Truman Lee Kelley, who has been on the faculty of Stanford University since 1926 and who is well known for his statistical and experimental studies in education, has accepted appointment at Harvard, where he will offer courses in advanced statistical method and a seminary in psychometrics and will continue his research in the analysis of mental structure and functions.

Medical Center for Negroes. A campaign to raise $3,000,000 for a modern training school for negro medical students and a modern hospital for negroes has been undertaken cooperatively by the Provident Hospital and Training School, Chicago, and the University of Chicago.

Mellon Institute. A new building is to be begun in the autumn which will permit material expansion of the Institute's research activities and provide space for many more than the 63 industrial fellowships that tax the present facilities to the utmost.

National School in Syria. Marie Kassab, founder and president of the Ahleyah School of Beyrouth, was in the United States last spring. Her school is national and non-sectarian and was organized during the War, when most of those in Syria and Lebanon had been closed by the Turkish government; it is intended to give girls a thorough, modern preparation for life, including physical education and training for homemaking. In 1930, there were 250 students, including 63 boarders, and 25 teachers. Among the needs for which Miss Kassab is attempting to secure American help is a building for domestic science and other practical arts.

Rachel McMillan College. The Queen visited this new English institution in Deptford (a suburb of London) at its formal opening in May. Named in honor of the founder of the nursery school movement, it is for the training of students of child care, and its nursery schools include interesting open-air features. Eighty students are already enrolled.

Textile Foundation. The charter of this new organization provides that the secretaries of agriculture and commerce shall be members of its board of directors. At the first meeting of the board, Franklin W. Hobbs, president of the National Association of Wood Manufacturers, was elected chairman; E. T. Pickard, chief of the textile division of the Department of Commerce, was named acting secretary; and temporary headquarters were arranged in that Department. The formation of the Foundation was given wide notice in the press.

NEVADA

Nevada Home Economics Association. Friday evening, April 25, the Association met and elected the following officers: president, Bertha Akin, Las Vegas; vice-president, Rose Cologne; secretary-treasurer, Mrs. Louise Springer.

Home Economics Clubs. A meeting of the Nevada Fireside Circle was held at the University of Nevada on Friday evening, April 25. Officers were elected as follows: president, Lavina Whitney, Las Vegas; vice-president, Lena Jensen; treasurer, Merle Jones; secretary, Zella Pulsipher, Bunkerville; and club adviser, Ruth A. Talboy.

The clubs that have affiliated with both the national and state associations are: Overton, Winnemucca, Las Vegas, Tonopah, Bunkerville, Battle Mountain, Wells, Wellington, Lund, and Sparks high schools.

Home Economics Contests. There were nearly a score of divisions to the sixth annual home economics contest held in Nevada Schools and over thirty awards. Schools judged as having carried on the best home projects during the year were in Sparks, Tonopah, Overton, Lund, and Bunkerville.

NEW ENGLAND

New England Home Economics Association. Dr. Josephine Kenyon of New York City spoke on "Adolescence" at the annual meeting held on May 17 at the Harvard Graduate School of Business Administration.

At the annual business meeting, the following officers were elected: president, Katherine Baker; first vice-president, Lou Lombard; second vice-president, Mrs. Ida Harrington; third vice-president, Esther Erickson; corresponding secretary, Mrs. Reena Hasker; recording secretary, Evelyn Asbrand; treasurer, Nellie Hord; directors, Millicent Coss and Anna Kloss.

NEW HAMPSHIRE

State Board of Education. Louise Norton of Boston has been secured to fill the newly created position of state supervisor of home economics. A graduate of the University of New Hampshire in the class of 1925, Miss Norton has had teaching experience at Keene Normal School and in a private school in Cleveland, Ohio.

NEW JERSEY

North Jersey Home Economics Association. One hundred and forty members from the section of the state north of New Brunswick attended the annual spring meeting at the East Orange High School. At the short business meeting presided over by Mary M. Buckley, the following were elected officers for the coming year: president, Grace Cowles, Montclair High School; vice-president, Frances Wilbor; secretary, Catherine Calahan, Public Service, Newark High School; and treasurer, Mabel McMurray. About thirty went swimming in the school's fine pool, and all enjoyed the delightful buffet supper prepared under the direction of Laura Fawcett, director of home economics.

Mlle. Paulette Bernège, editor of the French periodical *Mon Chez Moi* and president of the Housewive's League of Paris, was the speaker of the evening. Ada Bessie Swann afforded much amusement by her showing of a motion picture film taken at the state meeting in New Brunswick.

A studies committee of the North Jersey Association composed of Mabel Kysor, Frances Wilbor, Mary Raven, and Pauline Girard reported on the data obtained from the 165 questionnaires sent out some time ago to teachers and supervisors to determine if high school home economics is used as a wage producer. The report showed that a large number of vocational and continuation school students are employed at wages ranging from $10 to $40 per week. In 10 of the 59 high schools reporting on this point, home economics is interpreted from a vocational point of view, and in 49, from a cultural point of view. Home economics is an elective in 45 and a required subject in 29 schools, depending upon the course taken. No studies of the demand for home economics graduates and no records of this phase of home economics are being made in high schools. In two instances it was stated that high school home economics is helpful to those entering the nursing profession. The committee would be grateful for suggestions as to the next step.

NEW MEXICO

New Mexico Agricultural College. The home economics department held its annual open house on May 22. The exhibits included freshmen, sophomore, and junior clothing work, related art work, illustrations of furnishings for a college man's room and a college woman's room, floral arrangements, selections of clothing, a collection of Japanese prints, a group of pictures by a local painter, and a collection of etchings by well-known etchers loaned by the American Federation of Arts. Refreshments were served by the sophomore foods class.

Dr. David Snedden of Columbia University gave a series of lectures the first

week of summer school on "Vocational Education for Sparsely Settled Areas."

Hildure Anderson of the home economics department is attending the University of Chicago this summer.

Mrs. Vina Gardner, state vocational home economics supervisor, Mary Greenwood, research specialist in home economics, and Grace B. Long, Veda Strong, and Carolyn Wetzel of the extension service attended the American Home Economics Association convention at Denver.

Extension Service. The extension service will conduct four district farm women's camps during the summer.

Two home demonstration agents from New Mexico attended the extension house party held at Brook Forest, prior to the opening of the national meeting in Denver.

Vocational Home Economics. The annual state conference for vocational home economics teachers will be held August 28, 29, and 30 at State College, New Mexico. The conference group will work specifically on revision of the course of study. Margaret O'Loughlin, teacher trainer in home economics, and Mrs. Vina R. Gardner, state supervisor, will lead discussions. In addition an out-of-state visitor will help with some particular subjects.

NEW YORK

New York Home Economics Association. *Central District.* The annual meeting of the central district took the form of a luncheon on May 24 at Drumlins, in Syracuse. Muriel Brasie of Cornell University, the main speaker, chose as her topic "The Psychology of Clothes."

The Syracuse University exposition on May 1, 2, and 3 gave visitors an opportunity to see work being done in the various departments. The exhibits of the college of home economics received very favorable comment, due largely perhaps to the fact that those which required considerable scientific background were arranged so that everyone was able to understand their significance.

Southeastern District. The southeastern district held its annual meeting on May 22 at the Hotel LaFayette, New York City. Lita Bane of the *Ladies' Home Journal* spoke on "New Homemakers for Old."

Teachers College, Columbia University. Announcement was made in June of the resignation of Dr. Helen Thompson Woolley as professor of education and as director of the Child Development Institute at the College, both resignations to take effect in September.

NORTH DAKOTA

North Dakota Home Economics Association. The Association made a small contribution toward the expenses of Ethel Kraft, a home economics junior at the State College, who represented North Dakota at the student club meetings at the American Home Economics Association convention. She will give a report at the North Dakota Home Economics Association when it meets next October.

North Dakota State College. Florence Willson, who studied at Merrill-Palmer the past year, had charge of the nursery school for the summer session.

Frances Jones, nursery school director for the past year, held a position in the nursery school at Vassar for the summer.

Adelaide Laurie of the clothing department was Beta alumnæ delegate to the Phi Upsilon Omicron conclave at Denver in June, while Ethel Kraft represented Beta active chapter.

This summer for the first time one-week units in home economics carrying college credit were offered at the College, which enabled many who could not come the full six weeks to enroll for the special units which interested them most.

State Department of Vocational Education. The annual state conference for teachers of vocational home economics was held at the State College, Fargo, June 17 to 21. Mrs. Daisy Kilgore of the University of Nebraska gave a five-day course in methods of teaching related science, which was offered as a one-week unit of the regular summer school as well as part of the conference program.

Ruth Williamson, Walsh County Agricultural High School, Park River, was employed for an extra month to supervise home projects.

OKLAHOMA

Oklahoma Agricultural and Mechanical College. The annual summer conference for teachers and students of home economics education was held in the home economics building on June 12, 13, and 14. The general theme was "Progressive Teaching," which involved a discussion of the principles and practices in modern educational methods as related to the teaching of home economics. Special speakers were Mrs. Eileen Harrison, director of adult education, State Department of Vocational Education; Mrs. Edyth Wallace, specialist in adult education, Ardmore; Lilian Baker, head of the clothing and textiles department, Kansas State Agricultural College; and Kate North, state supervisor of home economics education.

A series of unit courses, open to graduate and undergraduate students and carrying two hours credit each, is being offered by the home economics education department. Units and teachers are as follows: The unit in child guidance and parent education by Dr. George D. Stoddard, Child Research Center, University of Iowa, and Mrs. Gladys H. Groves, Chapel Hill, North Carolina; clothing and textiles by Lilian Baker, department of clothing and textiles, Kansas State Agricultural College, and Eunice Jenkins, department of domestic art, Baylor College; and household equipment efficiency by Mrs. Vivian Brashear, home management specialist, Iowa State College, and Dr. J. H. Cloud of the physics department, Oklahoma Agricultural and Mechanical College.

OREGON

Vocational Home Economics Conference. The vocational home economics teachers held their annual state conference in Corvallis from June 3 to 7. Mrs. Merle Davis, teacher trainer at Oregon State College, and Frances M. Wright, state supervisor of home economics education, were the conference leaders. The professional interest of Oregon home economics teachers was indicated by a 100 per cent attendance of the vocational group and the presence of a considerable number of non-vocational teachers for part or all of the conference.

As the group wished to consider the choice and arrangement of equipment for the home economics department, a trip was made to the vocational departments at St. Helens and Sandy, which have recently purchased new equipment. The cooperation of these districts in furnishing school busses to transport the group minimized the expense and added to the fine spirit of the trip.

Among the subjects discussed at the conference were methods of teaching child development, laboratory management problems, methods of teaching family and social relationships, home projects, the home economics club, publicity, Wright and Allen's "Factors for Evaluating a Vocational Program," and a program of work for home economics departments for 1930–1931.

A collection of more than fifty pictures showing the work carried on by high

school home economics departments all over the state was used as a basis for many of the discussions and made it possible to compare equipment, to gain ideas as to projects in various phases of home economics, and to draw conclusions as to types of pictures which are of the most value for publicity for the department.

Home Economics Clubs. A group of high school home economics clubs united in a project to raise funds for a library for the home economics department of Ewha College at Seoul, Korea, which will be in charge of the Misses Hanna and Poonok Kim who have recently received masters degrees from Oregon State College. The fund, which amounted to more than fifty dollars, was contributed as part of the social service work of the following clubs: Woodburn, Ontario, Cottage Grove, Rainier, St. Helens, Clatskanie, Molalla, Independence, Medford, and Gresham. Hedwig Bleeg of Portland and a group of young women of the Corvallis Methodist Church contributed.

PENNSYLVANIA

Philadelphia Home Economics Association. As a result of the membership drive directed by Esther Steiger, membership has been increased from 199 in June, 1929, to 362 in March, 1930.

Successful meetings were held in October, November, January, February, April, May, and June, the one in February drawing an attendance of over seven hundred.

The Association conducted a round table on "Problems in Home Economics" at the spring Conference of Higher Schools arranged by the Philadelphia Teachers' Association. Dr. Henrietta W. Calvin presided, and Helen C. Goodspeed led the discussion. The program was so arranged that the teachers could present some of their special problems and their methods of handling them.

The Association established in 1929 the Alice A. Johnson scholarship in home economics for a girl graduating from a Philadelphia high school who wishes to go to college. It covers costs of tuition and fees at Drexel Institute, Temple University, or the University of Pennsylvania, depending upon the choice of the holder. The scholarship is for one year, but the Association plans to renew it annually until the holder is graduated from college, provided she continues to demonstrate fitness and ability and also continues to need financial assistance. In order to support the scholarship the Association needs $5,000.

Student Clubs. Student clubs affiliated with the American Home Economics Association are found in the following schools: Temple University, Drexel Institute, Mansfield State Teacher's College, Williamsport High School, West Philadelphia High School, Lock Haven High School, Allentown High School, Waynesburg High School, Cedar Crest College, Weber School, Punxsutawney, and Gregg Township Vocational School, Spring Mills. In many high schools independent clubs have been formed and are doing fine types of social service.

Indiana State Teachers College. The laboratory work of the child development class began the first week of March. This is the fifth semester that the nursery school work has been parallel with that in child development. Twenty children ranging in ages from 2 to 4 years are enrolled this semester.

The classes in costume design have completed a study of historic costume. Students in the class decided that, as prospective home economics teachers, they should be able to give assistance to other departments in high schools in planning costumes of the different periods.

State Teachers' Colleges. The colleges at Indiana and Mansfield held an

interesting joint conference this year at the Bloomsburg State Teachers' College on the revision of teacher training courses in vocational home economics education.

Temple University. Gertrude Peabody, formerly director of the home economics department, has been appointed dean of women. Laura Drummond, a member of the home economics staff, succeeds Miss Peabody as director of the home economics department.

Laura Anderson of the clothing department discussed the question of "How Much Should We Spend for Clothing?" with a group of industrial girls of the Frankford Y.W.C.A. on January 27.

The members of the Student Home Economics Club were hostesses at a party for the alumnæ of February '28. Grace Dimelow, educational director of the Butterick Publishing Company, gave an interesting talk on spring fashions.

West Philadelphia High School. Sixteen boys enrolled in the courses in food study first offered to them in September, 1928. Since then, interest has spread until in February, 1930, registration totaled 161. The class meets two periods a week and the work includes units in camp cooking; food values and meal planning; diets for high school boys, for the sick, and for young children; etiquette; spending the family income; household emergencies; and problems of modern family life.

Clubs doing similar work with boys' groups have had a very active year in the high schools of Pittsburgh, York, and other centers in Pennsylvania.

Homemaking Cottages. A growing interest in the use of homemaking cottages for instruction in home economics is evident by the number of houses built or purchased within the past three years in the following districts: Canonsburg, Washington County; Hatboro and Hatfield, Montgomery County; Oxford, Chester County; and Morrisville, Bucks County. It is hoped that new houses in Claysville, Westmoreland County, and East Greenville, Montgomery County, will be ready for occupancy during the coming school year.

Pittsburgh. The Pittsburgh Household Economy Association increased its membership during the past year and at the same time every member became a member of the American Home Economics Association. The usual program of social service prevailed, and programs were given at the regular meetings that were interesting and profitable to the members. The Association recently earned $210 at a benefit bridge. This money will be used to provide 5 needy girls from the trade school with $1.00 a week for the entire school year for car fare.

York. In the William Penn High School work in child development has been established for both junior and senior high schools. The study of home and family relationships is being worked out on a new basis of short units dealing with typical activities in family life. Similar work is being developed in other schools of the state.

State Vocational Conference. This was held at Eagles Mere, June 26 to 28, with Mrs. Anna Green as director, Mrs. Edith Davison as assistant director, and many vocational teachers in attendance.

TENNESSEE

Tennessee Home Economics Association. At the annual meeting held in Nashville on April 18 in connection with that of the Tennessee State Teachers Association, the following officers were elected: president, Bess L. Henderson, State Teachers College, Memphis; vice-president, Pearl Haley; secretary, Margaret Browder, Nashville; treasurer, Lillian Keller. Martha Koehne, Univer-

sity of Tennessee, and Rachael Stutsman, Merrill-Palmer School, were the main speakers of the day. A state organization of student clubs has been perfected under the guidance of Mrs. Print Hudson, state chairman.

A feature of the meeting was the organization of the group of college home economics teachers with Bess L. Henderson as chairman. The day's program included a luncheon at the Nashville Y.W.C.A. and a sight seeing trip to The Hermitage.

George Peabody College for Teachers. The Home Economics Club sent 2 delegates to the American Home Economics Association meeting in Denver, Bernice Hill, a senior, and Donel Kelley, a freshman. The Club worked hard during the year to make this possible.

The home economics department has the following additional faculty members for the summer quarter: Mrs. M. M. Davis, former home demonstration agent of Virginia; Mrs. W. C. Dickinson of Nashville; Mrs. Myrtis W. Hall of Mobile, Alabama; Mattie A. Trickey of John Tarleton Agricultural College, Texas; Dr. Bernice Wait of Chicago; and Gladys J. Ward of Chicago.

State Teachers College, Memphis. The home management house opened its doors to the Memphis public during Better Homes Week, April 27 to May 3. Members of the home economics club acted as hostesses.

The annual assembly program given by the Ioka Wikewam Home Economics Club took the form of an international banquet, the following countries being represented by members: Japan, China, Scotland, India, Holland, Italy, and France.

University of Tennessee Junior College, Martin. The house furnishing class, with the cooperation of the foods department, has completed a project of furnishing the new farm cottage at a total cost of five hundred dollars. This cottage, occupied by one of the farm laborers, provides both a real home problem for student observation and a set-up outline for young people who are to furnish a home for the first time.

Twenty-seven college boys enrolled in the short, non-credit course in home economics for boys given for the first time this year. One lesson was given in each of the following: nutrition, selection of food, table service, selection of clothing, and child care. The foods, clothing, and child care instructors assisted in this course.

Twenty-eight delegates to the International Kindergarten Union Convention in Memphis, April 21 to 26, spent one day in Martin to visit the nursery school operated as a laboratory for the college students in child care and development courses. One of the foods classes served a buffet luncheon to the guests.

State Vocational Conference. The State Vocational Conference met at the University of Tennessee from May 26 to 30. Leaders for the various meetings included Louise Landis, Jessie W. Harris, Ella J. Day, Ida Anders, and Ruth Lindquist. A program of work was planned for 1930–1931.

Cookville. Better Homes Week was observed in Cookville by the opening of a new home built by Oswald Scott. The entire furnishings were budgeted for a family of four, living on $100 a month. Home economics departments and organizations in the city, assisted by such agencies throughout the county, aided in making the project a success. The responsibility of furnishing the different rooms was placed in the hands of the home economics departments of the Tennesee Polytechnical Institute, Central High, Baxter Seminary, home demonstration clubs, and the Twentieth Century

Mothers' Club. Programs on interior decoration, home life, home environment, home management, and selection of books for the family were given each day at 2.30 p.m.

VIRGINIA

Virginia Home Economics Association. Ilena M. Bailey, in charge of home economics research at the Virginia Experiment Station, was the Association's official representative at the Denver meeting. She attended the special conference of Purnell workers on standards of living studies.

State Teachers College, Harrisonburg. The April issue of the *Virginia Teacher*, the educational magazine published by the College, was a special home economics number.

Julia Robertson, Genievieve Warwick, and Frances Houch attended the annual conference for vocational high schools in April. This conference was directed by Mrs. Ora Hart Avery, state supervisor of vocational home economics education. Miss Robertson spoke on the development and use of job sheets in teaching home economics units.

Virginia Polytechnic Institute, Blacksburg. At commencement this year, the fifth since the establishment of the home economics department in the college, the first master's degrees were awarded to students of home economics.

The department expects to move into its new quarters some time during the 1930–1931 session. There will be laboratories, classrooms, offices, and a social room for all women students of the college.

Students taking the course in child care last year spent some hours each week during one quarter caring for children in faculty members' homes.

Following the plan successfully carried out last year, the department opened the two college houses for women students during the last week in July in order to entertain the women speakers and visitors to the Institute of Rural Affairs.

Emma S. Weld is spending the summer in Europe. She was a member of Dr. Andrew's course in June, after which she planned to visit schools of home economics.

Extension Service. Belle Burke and Helen Ricks, district home demonstration agents, will study at the University of Virginia and the University of Tennessee, respectively, this summer.

A clothing specialist was added in July to the home demonstration division of the extension service. Cymbel Taylor, who has just received her M.A. from Teachers College, Columbia University, has been appointed to the position.

WASHINGTON

The State College of Washington. Alice Newbill, assistant dietitian in charge of the McCroskey Hall dining service, has been granted a fellowship at Kansas State Agricultural College and will work for her master's degree next year.

Myra Potter, research assistant for the past two years at Kansas State Agricultural College, has been appointed instructor in nutrition next year.

The following members of the staff attended the American Home Economics Association meeting at Denver: Dean Florence Harrison, Leila Hunt, Mrs. Nellie Howard, Ethel Clarke, Evelyn Roberts, and VeNona Swartz. Marian Smith, president of the Ellen H. Richards' Club, was student representative.

Ann Craddock, Eva Williams, and Catherine Bryden of the regular faculty are teaching in the summer session.

University of Washington. The number of graduates in nutrition economics has doubled in two years. Approximately half take the apprenticeship train-

ing in hospitals; others find work in school and college dormitories and dining halls; some enter the commercial field. The Anti-Tuberculosis League of Washington, which is devoting much attention to a state-wide nutrition program, employs four of last year's graduates as nutritionists.

Dr. H. C. Sherman of Columbia University will be a guest of the University on July 31, when he will deliver an illustrated public lecture on "Some Recent Advances in the Chemistry of Nutrition."

WISCONSIN

Wisconsin Home Economics Association. Susan West of Milwaukee-Downer College was selected by the council as delegate to the meeting of the American Home Economics Association in Denver.

Cecelia Abry, instructor in textiles and clothing, is spending the summer in Europe.

Mrs. May Reynolds, assistant professor of home economics, is studying under Dr. Lydia Roberts at the summer session of the University of Chicago.

Laura Holmes, instructor in related art, and Louise Millhouse, instructor in foods, have resigned and will be married this summer.

University of Wisconsin. Agatha Raisbeck, '24, who has been a member of the agricultural journalism staff at the University for four years, has accepted a position with the *Ladies' Home Journal*. She began her new work on July 1. Waida Gerhardt, '28, who has been a dietitian in the Presbyterian Hospital in New York City, will replace Miss Raisbeck at the University.

Mrs. Lillian Gilbreth, noted engineer and author, lectured at the University on May 21 on "Skills and Satisfactions." From Madison she went to Stevens Point to speak to the students at the Teachers College.

WYOMING

University of Wyoming. Marita Monroe, instructor in institutional management, has been granted leave of absence for next year to study under a fellowship at Kansas Agricultural College.

Dr. H. C. Sherman will give a few lectures on nutrition at the University during August.

Mildred Carlstrum, who was graduated in June, will teach home economics at Superior.

Extension. Edith Gwynn, who received her degree in June, has been appointed home demonstration agent at large.

There will be five mothers' and leaders' camps in the State this summer under the direction of the extension service. Fannie Buchanan of the R. C. A. Victor Corporation is to have charge of the work in music appreciation at four of these. Esther McGinnis, in charge of parent education at the University of Minnesota, will give two lectures on parental education at the Sheridan camp.

Personal. Margaret McClellan of Lyman, Wyoming, and Elma Garman, teacher at Newcastle, Wyoming, will spend the summer touring Europe.

Veva Lukin, teacher trainer, and Mary S. Lyle, state supervisor of home economics education, attended the Pacific Regional Vocational Conference in Phoenix, Arizona, from May 5 to 10.

Mary S. Lyle taught at Colorado Agricultural College for the first three weeks of summer session.

Alice Christensen has been appointed to teach at Evanston, Wyoming. She formerly was located at Superior.

Floribel Kreuger, president of the Wyoming Home Economics Association, is on leave of absence for 1930–1931 from the high school at Laramie to continue her course in dietetics in Chicago.

OUR CONTRIBUTORS

The committee responsible for "Application of Electricity to Domestic Use" is listed on page 668.

CHARLES A. GATES, an A. B. from the University of California and an A.M. from Harvard, was for 3 years with the Massachusetts Department of Correction, studying the causes and means of prevention of juvenile delinquency, and is now assistant secretary of the National Probational Association, promoting the scientific treatment of the youthful offender by means of modern probation.

LOLA M. CREMEANS was introduced to JOURNAL readers in connection with an article in the April issue.

GRACE MARGARET MORTON, who is head of the textile and clothing division of the home economics department at the University of Nebraska, is enjoying a well-earned vacation in Europe. MARJORIE RUTH CLARK is head of the research division in the same department. She holds the bachelor's, master's, and doctor's degrees from the University of California and studied for two years at the University of Paris, France.

ANNA E. RICHARDSON is an old friend of home economists, who have known her as field agent of the Federal Board for Vocational Education and as dean of home economics at the Iowa State College as well as in her present position as field worker in child development and parental education in the American Home Economics Association.

ELLA HOLLENBACK is about to begin her ninth year as teacher of clothing in the Muncie Senior High School. She took her bachelor's degree at Lewis Institute, Chicago, and is this summer finishing work at Columbia University for the master's degree.

EDNA L. SKINNER, head of the home economics department of the Massachusetts Agricultural College, is a graduate of Michigan State Normal College and of Teachers College, Columbia University; she taught at the latter institution and at James Millikin University, Decatur, Illinois, before going to Amherst in 1918.

RUTH VAN DEMAN is in charge of the information service at the United States Bureau of Home Economics. She is a graduate of Smith College, with a master's degree from Teachers College, Columbia University, and had five years of editorial work on the publications of the Agricultural College at Cornell as preparation for her present position, which, among a variety of functions, includes that of editor.

CALLIE MAY BLISS is a bachelor and a master of science from Iowa State College and has had extensive teaching experience in various parts of the country, including three years as head of the textile and clothing department, Florida State College for Women. This year she has been studying again at Ames.

MARGARET B. HAYS is assistant textile physicist in the Bureau of Home Economics. An Oberlin graduate, she has done advance work in physics and mathematics at the University of Pittsburgh (Mellon Institute) and Bryn Mawr, and has also had experience in teaching those subjects.

HAZEL E. MUNSELL, head of the division of foods and nutrition in the United States Bureau of Home Economics, was among the contributors to the April JOURNAL.